

THEORY OF KNOWLEDGE SURVIVAL GUIDE



From the IB graduates at



Lanterna
education



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**LET'S
GET STARTED!**

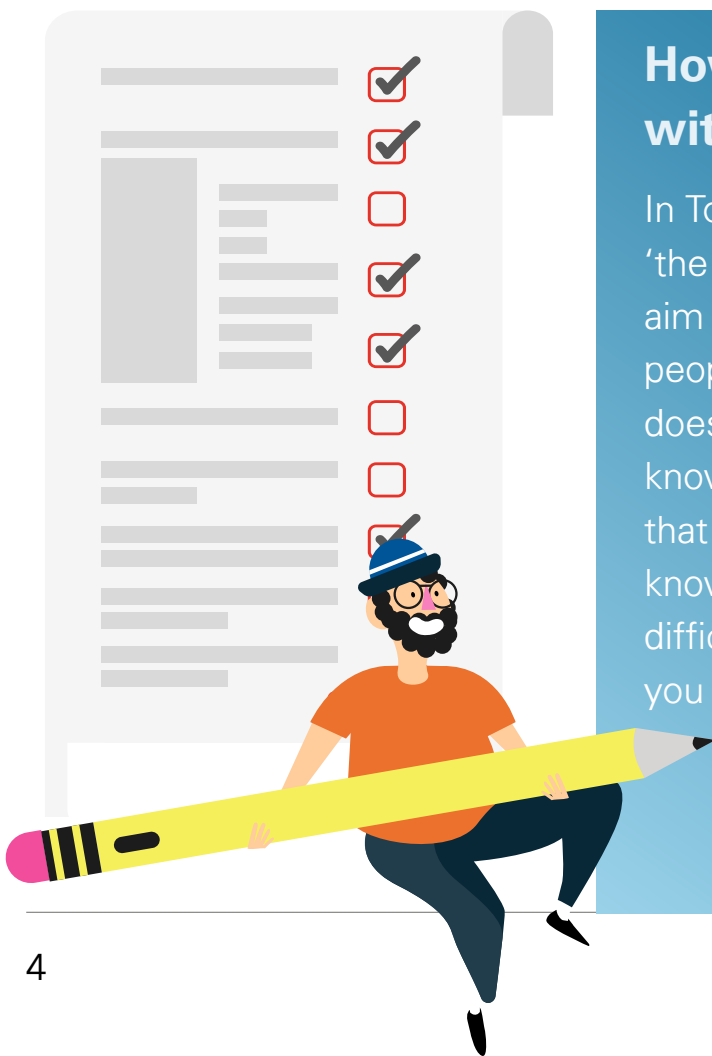




There's no denying that Theory of Knowledge can be confusing. When I did the IB, I struggled for some time to even understand what the subject was about. Eventually, I realised that in order to ace ToK you have to understand what the examiners really want. In this series I want to help you do the same. In each part we'll deal with something that normally trips students up or seems tricky. By the end of the series, you'll have no problem answering ToK questions or understanding the subject.

Why is it so confusing?!

ToK can be intimidating at first because it seems so abstract. What this means is that it is difficult to understand what you're being asked to do. It's the opposite to tackling a problem in a math class: even if you're not sure how to answer a math question, what you're meant to do is usually clear. You might be solving an equation, or finding the area of a shape, but you always know that there is a path to the solution – there is an agreed method to get to 'the right answer'. The reason lots of people struggle with ToK is that there is no 'right answer' to ToK questions.



How do I answer a question with no right answer?

In ToK you should not focus on finding 'the right answer'. Instead you should aim to reflect critically on the things people (including you) know. But what does it mean to 'reflect critically' on knowledge? Essentially, it means that you are supposed to think about knowing. I did say that ToK can seem difficult! But don't worry, I'm going to let you in on a secret about ToK...



The secret of success.

ToK might seem confusing. It is different from the other subjects in some ways. It is the only subject that encourages you to think about *what it means to know*. However, in one crucial way, Theory of Knowledge is similar to all the other subjects. In ToK, just like in English, math or science, there is a syllabus and a mark scheme. This means that ToK can also be broken down into simple, manageable bits. To achieve top marks in ToK you only have to do the following two things: 1) understand the syllabus; 2) produce work that tackles all the points specified in the markscheme. In this series we're going to go through the ToK syllabus – we'll make the 'confusing' stuff simple and explain how to ace your presentations and essays.

Without a doubt, the trickiest thing about ToK is that it seems confusing. We will work through the subject together, step by step, so that you can ace the assessments.



TYPES OF KNOWLEDGE: SHARED AND PERSONAL





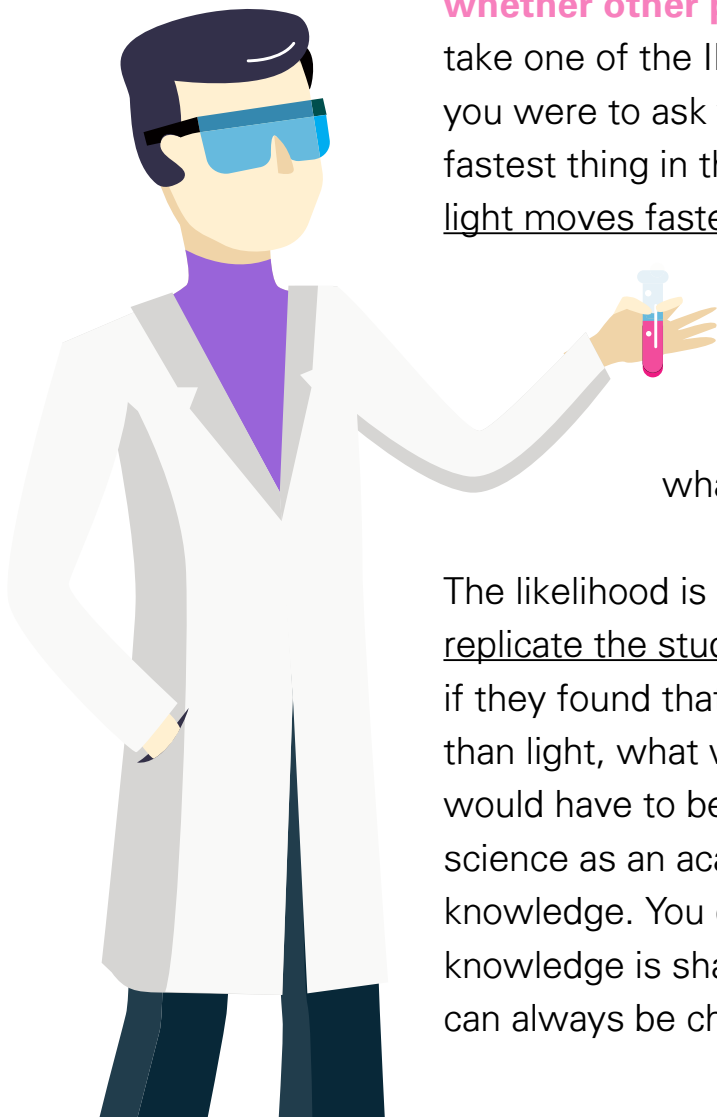
Divide and conquer!

One good way to understand something difficult is to break it up into manageable sections. In ToK, we are asked to explore knowledge and try to understand how knowing works. One way that the IB suggest we think about this is by dividing knowledge into two categories: 'shared' and 'personal'. You can tell the two types apart by the way that they are expressed. When someone is using shared knowledge they say, 'we know because', whereas when they are using personal knowledge they use the phrase, 'I know because'. That's just a summary...it is a bit more complex!

Shared knowledge

The best way to tell if knowledge is shared is to **look at whether other people can check and correct it**. Let's take one of the IB subjects, physics, as an example. If you were to ask your physics teacher to tell you what the fastest thing in the universe is, they will likely say that light moves faster than anything else. It moves through a vacuum at an impressive 1080 million kilometres every hour! But, if we suppose that a study showed something moving faster than light, what would happen?

The likelihood is that other scientists would try to replicate the study, to check for themselves. However, if they found that indeed, something could move faster than light, what would happen? Our scientific knowledge would have to be corrected. This example shows that science as an academic subject is a matter of shared knowledge. You can use this method to find out whether knowledge is shared or personal, as shared knowledge can always be checked and corrected by the community.



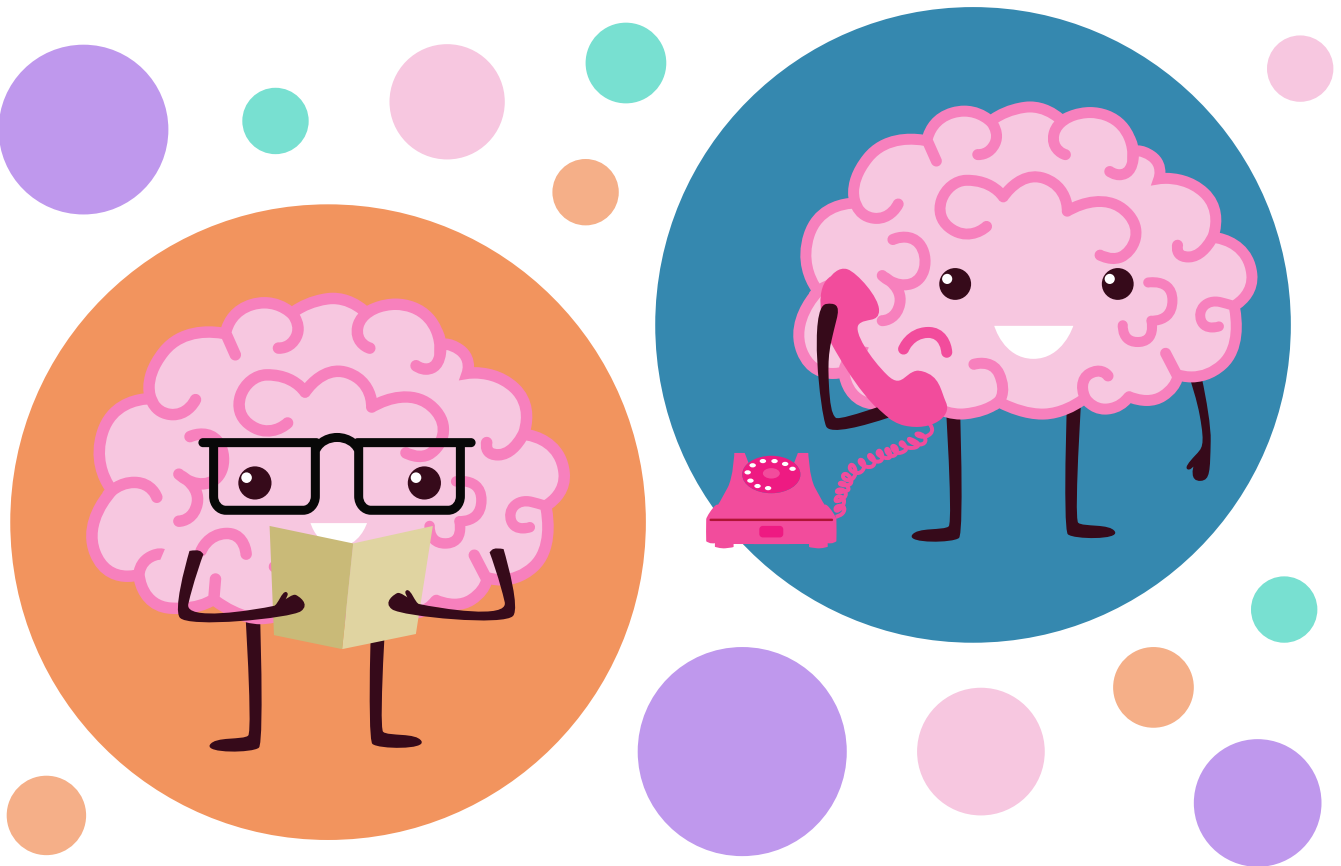


Personal knowledge

Personal knowledge is different. **Feelings** are an example of personal knowledge. Emotional statements can't be right or wrong, whereas scientific statements can. Personal knowledge can't be checked for accuracy or corrected in the same way as shared knowledge. **Skills and abilities** are also regarded as personal knowledge. Imagine trying to describe to someone what it is like to ride a bike. You peddle, of course, and the wind rushes past you as you go faster. But does this really describe the personal feeling of what it is like to ride a bike?

Knowing such things is personal knowledge – you have to experience it yourself to be able to know it at all. Therefore, personal knowledge can be really hard to communicate. The same is true for other skills, like sports, cooking and so on.





The interaction

It is true that knowledge can be understood in terms of its 'shared' and 'personal' categories. However, these two categories interact. Shared knowledge can have a strong impact on how we view the world. For example, somebody who studies economics might view their weekly shop quite differently in comparison to someone who does not study economics, as a result of their different academic knowledge. Their personal knowledge (regarding their weekly shop) has been affected by the shared knowledge that they have about economics as a subject (one being taught economics in school, the other not.) We can view this specific relationship as an intersection between the two types of knowledge – a point at which personal and shared knowledge meet.

Hopefully you now feel comfortable with the concepts of personal and shared knowledge. You should feel satisfied that you can identify which kinds of knowledge are being described. Make sure you make use of this in your essays and presentations to show that you really know your stuff!

KNOWLEDGE QUESTIONS AND KNOWLEDGE CLAIMS





Knowledge questions and knowledge claims are super central to ToK – in fact, the subject is based on them! In this section we're going to learn what they are. Then we'll think about some examples and how they might come up in your presentations and essays.

Knowledge questions

Knowledge questions are so important to ToK that the syllabus says, 'an essay or presentation that does not identify and treat a knowledge question has missed the point'. We certainly don't want to miss the point so it's essential that you are able to identify a knowledge question when you see one.

You might have come across this question before in ToK: 'how do we know what we know?'. This is an example of a knowledge question. **All knowledge questions ask about how we know things.** There really are an unlimited number of these kinds of questions, but let's look at 3 more specific examples:

- What counts as evidence for a scientific theory?
- What makes a good explanation in philosophy?
- Do we know whether it is right to coerce other people?

Each of these questions contains a key word which gives us a big indication that it is a knowledge question. Look at the questions and try to guess which is the critical word in each. Which words did you pick out?

The first question is asking about what counts as **evidence**. It wants us to think about what constitutes a standard of proof for a piece of knowledge.

The second question is asking about what makes a good **explanation**. A good explanation would support our claim to a piece of knowledge.

The third question is asking us to consider how we think about whether something is **right**. It invites us to explore the methods we use when we make a claim that something is right.



Read the three characteristics of a knowledge question below, then return to look again at the examples. It should now be clear that they are indeed knowledge questions.

3 characteristics of knowledge questions:

1. Knowledge questions are about knowledge. But they are not questions of what you know. 'Which is the third planet from the sun?' is not a knowledge question as it only asks for a piece of knowledge. Instead, a knowledge question asks how a piece of knowledge is produced – the 'methods and mechanisms' for producing knowledge. A good place to start when thinking about this is the Ways of Knowing. We will discuss the Ways of Knowing in the next section.
2. Knowledge questions are open. They don't have one right answer. Rather, there are multiple answers and different sides to the argument.
3. Knowledge questions are general. They are not specific to a single example. You must use your judgement for this. There is a scale that goes from asking 'what is the weight of my pen' to 'how do we know what reality is like'. The former question is very specific and therefore would not make a good knowledge question. The latter is too general and would not be good for you to tackle in your coursework. One guiding rule is that knowledge questions should not use vocabulary specific to any subject. Anyone should be able to understand all the words in a knowledge question!

Next time you want to identify a knowledge question, look at these three characteristics and check that it addresses them all.



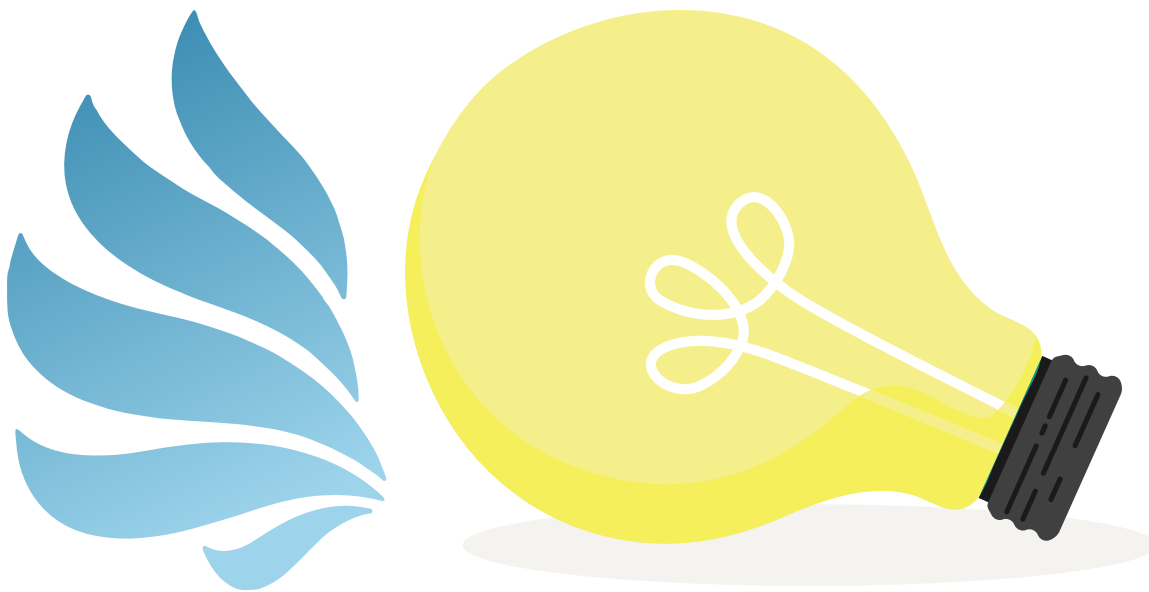


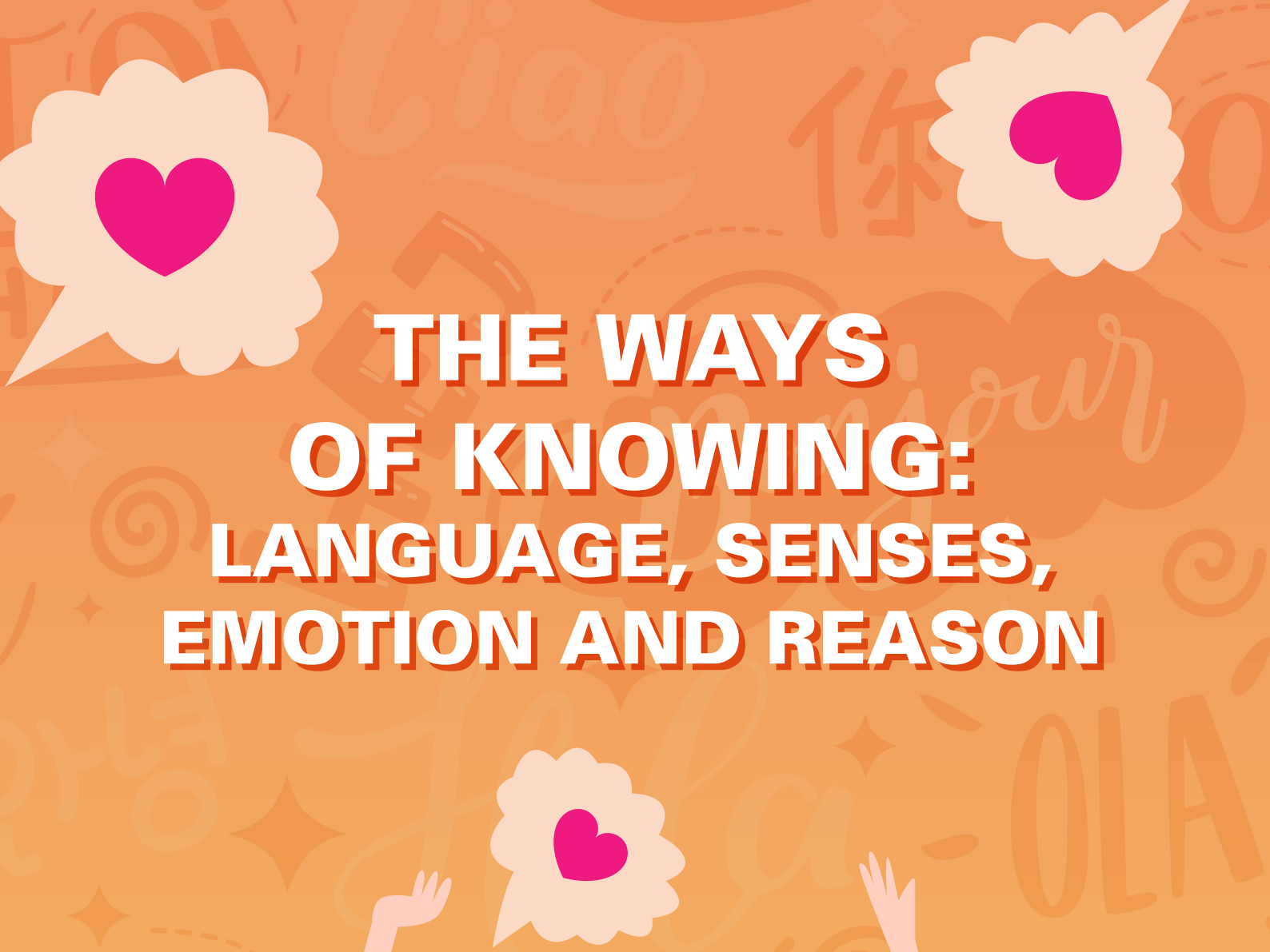
Knowledge claims

These are claims or statements saying that we think we know something:

1. Some claims are made by individuals, or communities, about the world and how it works. These are called **first order knowledge claims**. 'Mammals cannot fly' is a first order knowledge claim. The claim does not have to be true (for example, think about bats), but it does have to say something about the world.
2. Some claims are made about knowledge itself, for example, 'mathematical knowledge is always certain'. This is what we call a **second order claim** as it examines knowledge itself. We are seeking knowledge about knowledge!

Hopefully you now feel a bit happier about what knowledge questions are. You should be able to use your new skills to identify knowledge questions and even come up with new knowledge questions yourself. You should also have a good idea about what a knowledge claim is and have an understanding about the two types of knowledge claims. If you've been following the guide so far, you're well on your way to becoming a ToK master!





**THE WAYS
OF KNOWING:
LANGUAGE, SENSES,
EMOTION AND REASON**





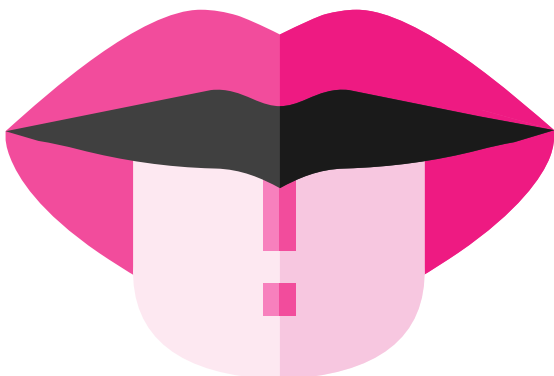
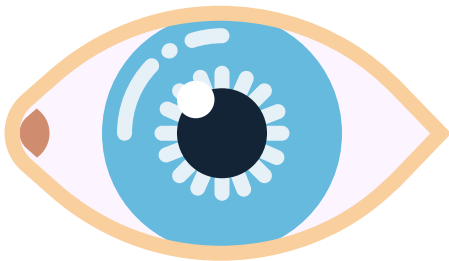
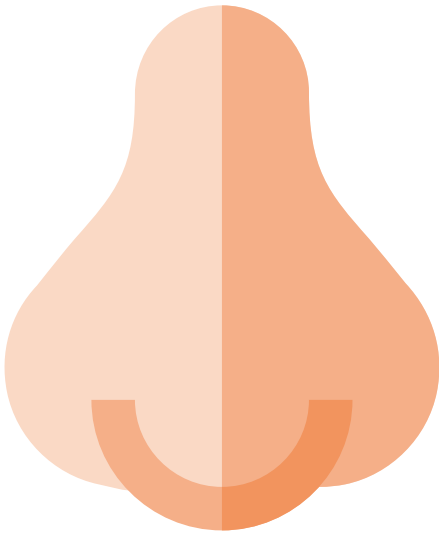
What are the Ways of Knowing?

All knowledge comes from somewhere. Even if we say that it is innate, meaning that it comes from within us, we still have to say how that knowledge appears. The Ways of Knowing are the methods through which knowledge becomes apparent to us. There are eight different ways of knowing you need to know for the IB: **Language, Sense perception, Emotion, Reason, Imagination, Faith, Intuition and Memory**. Although this might seem like a lot, the good news is that for the IB you're only really advised to study four of them in depth (although it's still worth knowing how each of them works).

Language

Language is defined as a system of **signs with meanings**. These signs include, but are not limited to: letters, pictures, symbols, sounds and gestures. Language is everywhere and some aspects of it may even be universal. As well as being everywhere, language is crucial to our survival and success. However, despite its **omnipresence** and **importance**, language is full of **potential problems**. There are often additional things to consider when sarcasm, ambiguity (when something isn't clear), irony or translation are involved. We all know how a joke in one language might not work in another!

Language is really important for communicating knowledge, despite its flaws. In ToK, you should think about how language communicates knowledge, and some of the problems that might creep up when we try to pass on knowledge through signs and symbols. One fascinating topic that you might not have heard of is the debate over '**linguistic determinism**'. This is the idea that language determines the way we think and that because a specific community speak in a certain way, the way they think is structured accordingly. You could argue that using only a specific language limits our ability to think! Others argue that the way we see things is not limited to our culture, and therefore the way that we think about them is universal. This is an ongoing debate and is a really interesting one to consider using in your presentation or essay.



Sense Perception

This Way of Knowing relates to the way a person **uses and understands** their senses. The traditional theory is that we only have five senses: touch, taste, smell, hearing and sight. However, as time has passed, more and more senses have been added. People have claimed that other senses include the sense of heat, the sense of pain, of movement, of balance and of hunger and thirst. It has even been suggested that we have a sense of where our body parts are in space. Some of these might seem a little unusual, but try this experiment: close your eyes and try touching your forefingers together. Were you successful? I bet you weren't far off!

Only the sense of proprioception (where your body is in space) could have allowed you to do this. One of the big debates here surrounds the idea of **empiricism**. This term, which you might have heard of, refers to the theory that **all knowledge comes from the senses**. This is a historical view. Now, it is more commonly believed that our expectations help shape our sense experiences. Thinking about how perceptions and beliefs influence each other is a fascinating topic for your essays and presentations. Illusions are a good illustration of how the brain's expectations influence our sensory experiences.



Emotion

There are two important schools of thought concerning emotion that tend to come up in ToK. One is called the **naturalistic view of emotion**. This view tells us that emotion is a result of our physical bodies, with *physical causes* and effects. Charles Darwin was one supporter of this view. One interesting implication of the naturalistic view is that emotions are seen as *universal* and experienced across cultures. The opposite view is held by **social constructionists**, who argue that emotions are socially constructed. This would mean that emotions come from our social environment. The social constructionists might point to an emotion like shame as an emotion based on social ideas of what is right and what is wrong. Without society telling you what actions are 'wrong' you might never feel shame. One question you might consider is whether emotion is a help or a hindrance when it comes to gaining knowledge. You could argue that emotion is a problem when seeking knowledge. For example, you might argue that emotion hinders rational thought and thus distorts reality. However, someone might disagree with you. Somebody could tell you, for example, that without emotions it is difficult to make sense of cultural and social experiences. People with autism often struggle to understand social situations and to know what it is that other people feel. What does this say about the universality of emotions?





Reason

Most people would tell you that they are reasonable, but definitions of reason vary greatly throughout the general population. Do you know what reason means? There are two things you should know in order to form an understanding of reason. **Firstly, it is important to understand logical deduction**, which allows us to work with starting ideas (premises) to **reach valid conclusions**. Here's a simple example:

Premise 1: Rex is a dog.

Premise 2: All dogs have fur. (Remember, this doesn't have to be true!)

Question: Does Rex have fur?

Valid conclusion: Yes, Rex has fur.

Going from premises to conclusions in this manner is called logical **'deduction'**.

Earlier, it was noted that deduction leads to *valid* conclusions. However, this does not necessarily mean that the conclusions reached are *true*. What it does mean is that *if* the premises are true *then* the conclusions will be true. Here's another example:

Premise 1: Peter is a man.

Premise 2: All men have eight legs.

Question: Does Peter have eight legs?

Valid conclusion: Yes, Peter has eight legs.



Remember — this might not be *true* — people don't usually have more than two legs! However, the conclusion is still *logically* valid because it follows from the two starting premises.

Secondly, it is important to understand logical induction. When we used deductive logic above, we made *general statements* (about men and about dogs). We used these to show something *specific* about a man (Peter, showing he had eight legs) and a dog (Rex, showing he had fur). In contrast, with inductive logic we take a specific example to tell us something about the *general*. For example, you might have noticed that most windows are made of glass. We could say the following:

Step one: All the windows I have seen are made of glass.

Step two: Therefore, all windows are made of glass.

Note that inductive reasoning can involve probability. It is easy to assume that as you've seen so many windows and they were all made of glass, all windows are made of glass. However, there is nothing stopping a window from being made of plastic or jelly. Logical induction is what we call **'inferential'**. This means that it creates a statement which is not strictly provable. There's no way I can prove that all the windows in the world are made of glass. I have just inferred this idea from my experience. This notion of inference helps us to separate deductive and inductive reasoning.



THE WAYS OF KNOWING: IMAGINATION, FAITH, INTUITION AND MEMORY





Imagination

Try the following thought experiment, really, try it!

‘Think of your favourite piece of music. Now imagine dragging your fingers across a chalkboard. Now imagine plunging your hand into a bucket of sand and feeling the grains crunch between your fingers. And now taste the difference between lemon and lime – which is more sour? There was no sand; there was no lemon. And yet, in response to a set of completely imaginary events, your mind produced very real physical reactions.’

This quote from author Olivia Fox Cabane highlights the power of the human imagination. What is being described here is the *traditional conception of imagination*: the ability to form a mental representation of a sense experience without the normal stimulus. There is another form of imagination, however, *propositional imagining*. This is the idea of ‘imagining that’ things differently from their reality. For example, if you were to imagine that that the cold war had never ended you would be using propositional imagination.

You should always link your ToK essays back to real life. One way that you can do this when discussing imagination is to talk about medical conditions that might affect the imagination. For example, thinking about severe autism can give an insight into how a *lack* of imagination might affect the way a person thinks. Thinking about schizophrenia can offer a perspective that considers the impact of delusions and what happens in the case of extreme episodes of imagination.

If you want to talk about imagination in your work, you would do well to contrast the way imagination has been treated in the past. Imagination is often respected as a part of creativity, problem solving and originality. However, imagination is also distrusted since it is highly subjective. Thinking about the way people have viewed imagination in the past can really show the examiner that you know how to reflect on the Ways of Knowing in your work.



Faith

When you're talking about faith, one effective approach is to discuss its meaning. This is effective because many people have an idea of faith that is actually only one way of defining the idea. There are many more to choose from. To some people, the idea of faith might be exclusively *religious*, for example, a faith in God. Faith in God is called *theistic faith*. However, religious faith does not necessarily have to be theistic. Buddhists typically believe in reincarnation but don't have faith in any God. Faith can also be secular. Try to think about all the different things we can be said to have faith in! For example, 'I have faith that it will be sunny on Monday', or, 'I have faith in her'. Therefore, commitment to a concept can be an expression of faith, but needn't be religious. People can be committed to an idea or a philosophy that guides their idea and can be said to have faith in it. Contrasting what faith means to a religious group, for example Hindus, and to believers of a secular philosophy, such as humanism, can be really productive.



Faith is a way of understanding the world, underpinning the way we choose to interpret things. If you wanted to be really critical in your ToK work you should think about the complex relationships between the Ways of Knowing. Take faith and reason as an example. Some people might claim that faith and reason cannot be reconciled and that they are totally different ways of looking at the world, which often conflict. However, many religions see faith and reason as interdependent. *Natural Theology* teaches that God can *only* be known through reason, which He gave to human kind. Exploring these different perspectives to critically reflect on faith might be very effective in your ToK work.



Intuition

Reason can be defined as using a rational process to arrive at knowledge. Intuition is quite different. Intuition concerns having an immediate sense of knowing, without any prior thinking. After a footballer kicks a ball towards a goal, an expert at the game might 'know' whether there will be a goal or not. The fact that this person has reached this knowledge without having to consciously calculate the outcome shows that what is being used is his or her intuition. But how is this sort



of knowledge possible? Psychologists believe that the subconscious mind is able to make many more observations than we consciously can in any given situation. All this data would be too much for us to think about consciously. However, we are able to process it on a subconscious level using our intuition. This is often described as having a 'gut feeling' about what is going to happen, or what the solution to a problem might be.

Intuition can be defined as *immediate awareness*. It is a very powerful Way of Knowing because what we might call 'flashes of insight' may actually come from our capacity of intuition. Imagine taking a sofa and trying to fit it through a doorway. If you were to look at the sofa you could probably make an instant judgement as to whether or not it would likely fit through. This approach would use your intuition (and perhaps some of the other WoKs as well). Computers do not have any capacity for intuition, as they are forced to use logic and *analytic processing or thinking*. This means that for a computer to decide whether your sofa would fit through the door, it would have to try every possible way of fitting the sofa through. The computer would have



to calculate whether or not the sofa would fit through on its side, its end, even diagonally. Using intuition, you would be able to tell instantly. If this is a strength of intuition, what do you think a weakness might be? How reliable is this Way of Knowing, and how well can it be used to justify your actions? Is the phrase 'I just know' very useful in a debate?

Memory

Memory is a Way of Knowing that many students overlook. This gives you the opportunity to say something unique if choosing to discuss it in your ToK essays and presentations. As with the other WoKs, a starting point for your discussion might be to define what memory actually is. We need to go beyond definitions such as, 'knowing what happened before', as these are not very helpful for critically examining memory. One way of defining memory is as follows: it is the faculty which allows us to *retain information and reconstruct past experiences*. Although, like everything else in ToK, it is up to you to think about this definition critically!

If you do choose to discuss memory in your work, it might be worth referring to an on-going discussion surrounding the status of this Way of Knowing. Some argue that memory is not actually a Way of Knowing. They claim that memory is simply the recollection of things we already know. In response to this, it might be worth considering two relevant points. The first is raised by the psychology of memory. Many people, when thinking of memories, imagine a tape that is recorded as we live our lives, and played back when we wish to remember something. However, this is not really the case. Whenever we notice an experience it is encoded into our memory, and each time we recall that same memory it is re-encoded. That means, if you remember an experience from your childhood, it is not the 'original' experience that you recall! Instead, you access the latest memory which was encoded the last time you thought about that thing. This *theory* helps to explain why memories are not completely reliable – if you were to photocopy a photograph every time you wanted to look at it, and only were able to keep the copy, how much detail would remain? A second point worth considering is about the importance of memory in gaining new knowledge. We do not gain new knowledge



in a vacuum. Our past experiences affect how our new experiences are interpreted. Because of this, memory is a huge part of how we gain knowledge at any moment in time.

If you want to discuss memory, it might be worth talking about illnesses that affect our faculties. Dementia affects many people as they grow older, and Alzheimer's affects a growing proportion of many countries with ageing populations. You might consider using these illnesses to think about how memory might not be a particularly reliable Way of Knowing. It might then be worth discussing how billions of people rely on their memories every day of their lives.



THE AREAS OF KNOWLEDGE: FRAMEWORKS





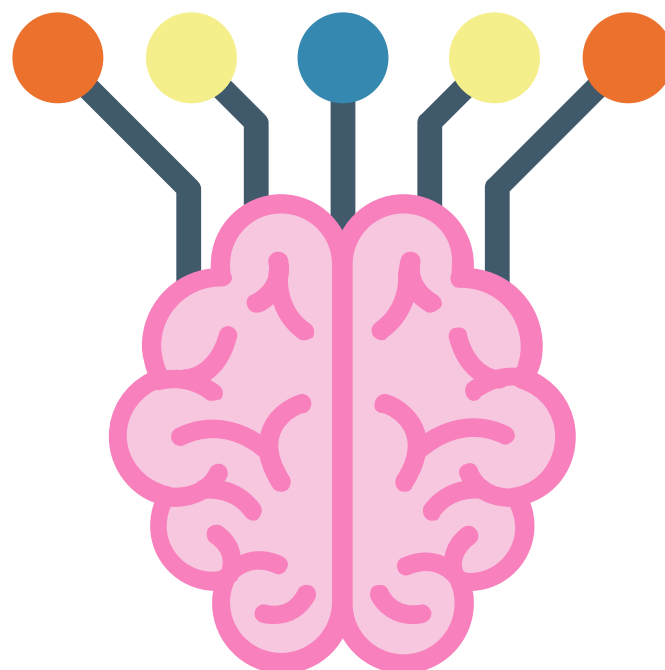
What are the Areas of Knowledge?

The Ways of Knowing, which we explored in the sections above, concern *how* we know things. The Areas of Knowledge are a bit different; these are about *what we know*.

You might remember that there are *8 different Ways of Knowing*. Well, there are 8 Areas of Knowledge too: Mathematics, The Natural Sciences, History, The Arts, Ethics, Religious Knowledge and Indigenous Knowledge.

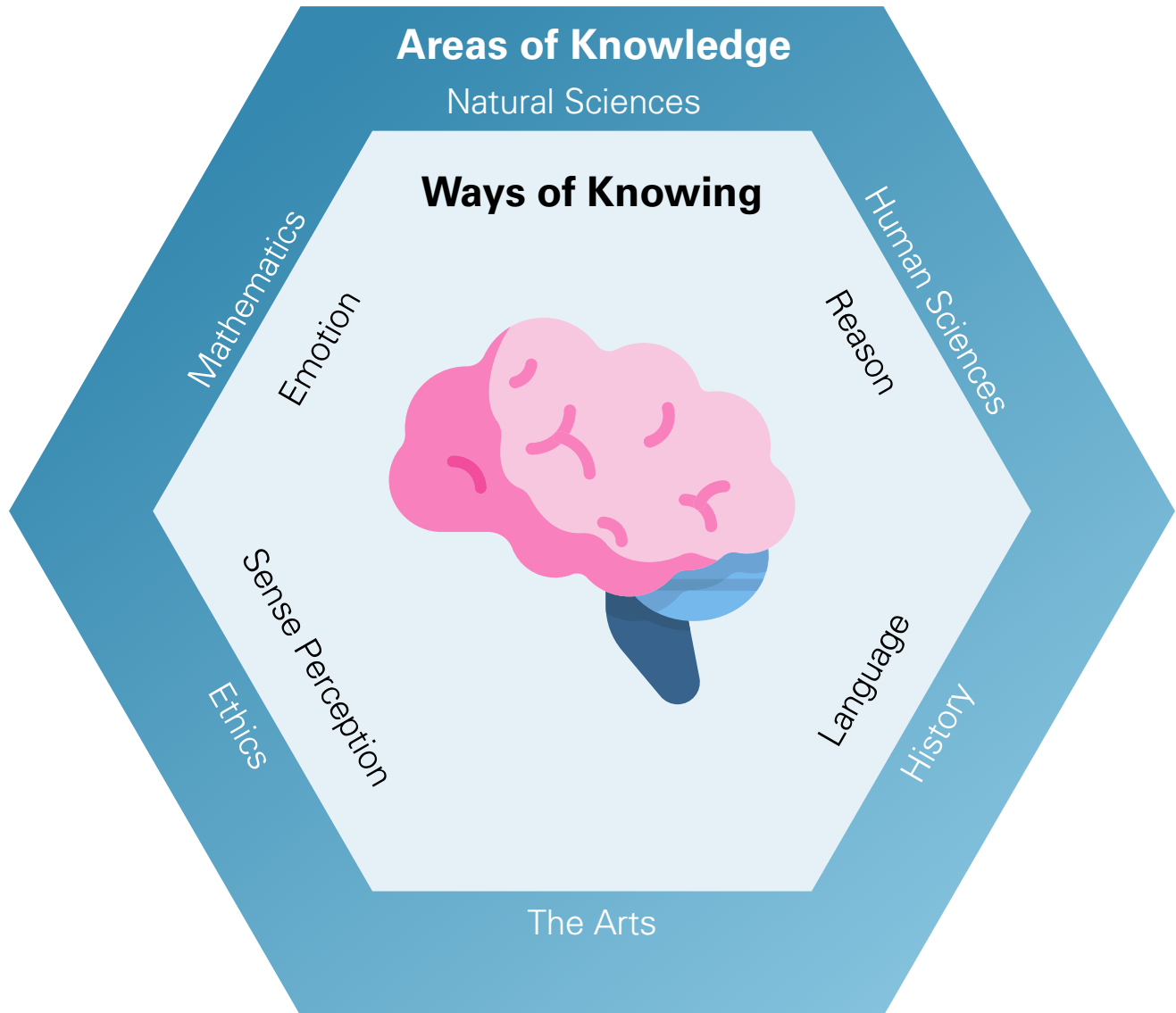
Each Area of Knowledge is a *system*, for example, the scientific Area of Knowledge. Within the scientific system there are *agreed ways to investigate things*. There are also agreed *standards of proof and argument* that are different in each Area of Knowledge. So we can think of an Area of Knowledge as a body of knowledge that seems to fit together in one system.

You might notice that the AoKs look a bit like the subjects you take in the IB. This is because the Areas of Knowledge are the ways we categorise the knowledge that we have. This is similar to how the IB divide up the different subject areas. Theory of Knowledge is at the centre of the IB and you should feel free to draw in material from any of your subjects during ToK discussions.





This diagram illustrates the way everything connects:





Before we dive into talking about the Areas of Knowledge we're going to talk about *Knowledge Frameworks*. These are the tools we use to think about the different Areas of Knowledge and they can be really helpful to show that you know your stuff in your work.

What are Knowledge Frameworks?

Each Area of Knowledge is massive and contains a vast amount of information. Let's take history as an example — the amount of information historians have discussed is phenomenal! Thankfully, you do not need to know about everything that has happened in history in order to be able to talk about it in ToK. Instead you need to know about how the subject *works*. That is what Theory of Knowledge is interested in. Not the content of the subject/AoK, but how it works.

There are many different aspects to consider when you are thinking about the way that a subject works. Let's take history as an example. You might ask questions like: what *motivates* historians to learn? What special *methods* do they use to discover historical information? You might even ask what the point of history is – or what its real world *applications* are. Asking questions like this help us to understand the structure of an Area of Knowledge like history. This basic structure is called a 'knowledge framework'. This is because it is an explanation of how history works – it provides an outline of the subject without all the content. You should be able to see how having a basic understanding of how history works is vital to understanding history as an Area of Knowledge.

We can understand the general structure and features of each AoK by asking about certain things. Below are 5 bullet points. Each one talks about features shared by all AoKs. All areas of knowledge have different methods of discovery, for example. Look at each bullet point below and think about how each applies to a specific AoK. This can give you a really strong understanding of how that AoK works.



Features of all AoKs

- Scope, motivation and applications
- Specific terminology (e.g. technical vocabulary) and concepts
- Methods used to produce knowledge (think about the Ways of Knowing)
- Key historical developments
(how has the AoK changed over time, if it has at all)
- Interaction with personal knowledge (AoKs include shared knowledge, is this changed by personal knowledge? Does it change our personal knowledge?)

Thinking about these bullets lets us create a knowledge framework to understand each AoK that is extremely useful for your essays and presentations. Knowledge frameworks allow you to ask the right questions about the aspect of knowledge you are considering. Now we'll investigate how you can apply each bullet point to a different Area of Knowledge.

Remember that these are the different ways to *critically* reflect on the AoKs. Such reflection makes a presentation much more impressive and shows that you really know what you're talking about.

Scope, motivation and applications

Thinking about an AoK's scope asks you to consider what the AoK includes. It encourages us to ask the following: looking at all of human knowledge as a whole, what does this Area of Knowledge include, and what is not a part of it? You might ask yourself, how much about reality can science tell us? Can it tell us what is at the centre of a star? Can science reveal why there are so many species of creatures on this planet? Can science tell us what it feels like to open an awesome present on your fifth birthday? Can it reveal to us what it feels like when the last class finishes before the summer break? Think about the scope of the AoK you are interested in. You should also consider the reason people pursue knowledge in that AoK, and the uses such knowledge has in people's lives.



Concepts/language

Language is important in many ways when discussing the Areas of Knowledge. Considering the role of language in each AoK is an excellent way to critically consider that subject. You might think that language is just a tool of communication. However, this is not necessarily the case. There is a debate about the role language plays in the construction of our knowledge. Some would argue that language is so vital that we have practically no knowledge without it. Others might, however, argue that knowledge exists and that language is simply a way to communicate or express this. Some people take a middle ground, arguing that language allows us to name concepts that do already exist. However, if we did not have language we would not be able to move past these simple ideas to more complex human thought. Deciding where you stand in such debates will allow you to take a strong position in any ToK discussion or work. You would do well to connect this up with ideas about *shared knowledge*. Remember, the majority of human knowledge is passed on between generations. What does this tell us about the use of language in each AoK?





Methodology

One of the key differences between the AoKs is that they use different ways to seek knowledge. Thinking about these different methods will help you understand how the AoKs are all different from each other. To really show you are a top ToK student, you should think about the *assumptions* that underlie the methods used to discover knowledge. Different AoKs rely on certain methods more than others. To discuss methodology in your essays consider asking yourself the following questions:

- What are the methods used in this AoK?
- What counts as a fact?
- How do we create 'models' in this AoK?

These questions are a good starting point for breaking down how the AoK works.

Historical development

The areas of knowledge are not fixed. Science, art and history are all very different now to how they were hundreds of years ago. This reflects the fact that knowledge is not seen as fixed. It is what we call 'provisional', meaning it is flexible and changes all the time. This can be positive as it allows our understanding of the world to grow. Thinking about how things have changed in the AoKs will help you show that you understand this change. Consider how much science has changed in the last two hundred years. Perhaps it has not changed too much at all, but what about history? Think about what it is that affects





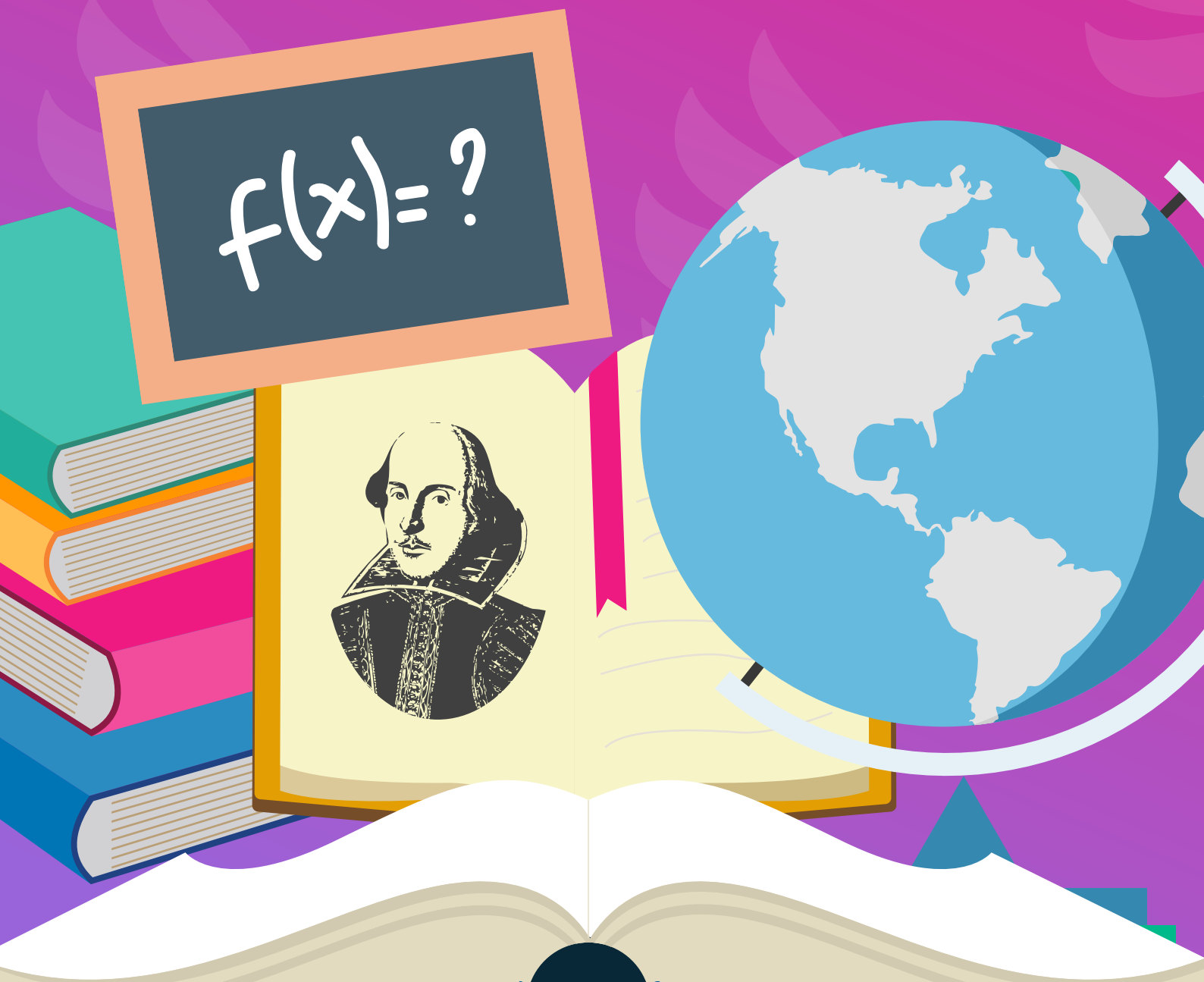
the rate at which these subjects change. This kind of discussion shows an understanding of the subtleties of ToK and will really impress someone marking your work!

Links to personal knowledge

Shared and personal knowledge is something we discussed in a previous section. You might recall that individuals contribute to shared knowledge when they discover or create new things. The other side of this coin is that shared knowledge can really impact the way we see the world. A scientist might see the world differently to a philosopher, for example. When you think about the different Areas of Knowledge, it is important to think about the impact this can have on individuals. Also, make sure to consider the impact that an Area of Knowledge has on your thinking. Do you think that studying different subjects throughout school has changed the ways you think at all? When you're writing a ToK essay, consider how perspectives differ from person to person and how thinking in a way that is dominated by a specific AoK can influence knowledge.



THE AREAS OF KNOWLEDGE: MATHEMATICS, THE NATURAL SCIENCES, THE HUMAN SCIENCES AND HISTORY



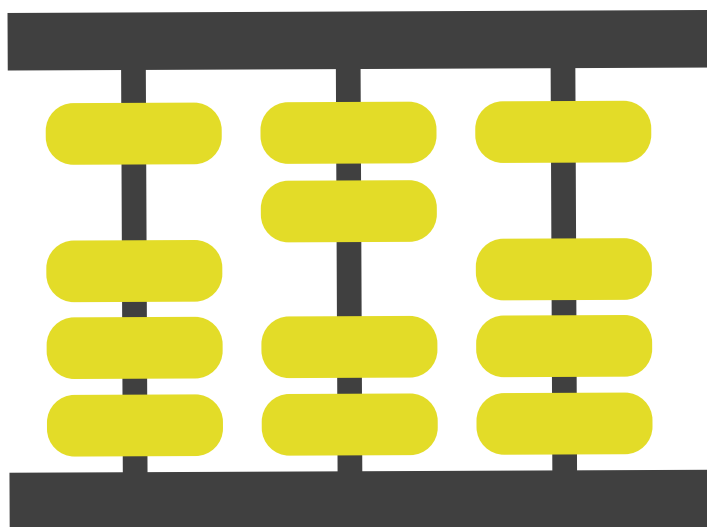


Mathematics

Mathematics is a fascinating topic to think about, largely because it works differently than many other areas of human reasoning. For example, in mathematics, we start from a set of universally agreed-upon axioms. An axiom is a basic fact or idea that we say cannot be changed. You might have also heard of the word premise. This is similar to an axiom as both are starting points upon which an argument can be built. In mathematics, the idea that the addition of two positive whole numbers can only ever lead to a positive whole number is axiomatic. No matter what positive whole numbers we add together they will always produce a positive whole number.

Mathematics is unusual because it is founded on axioms which are more or less universally accepted. This means that across time and cultures mathematics seems to be universal. One discussion that surrounds this is the debate over whether mathematics was discovered or invented. Whilst some claim that it is the product of human thinking and thus must by definition be an invention, others refute this perspective. It can be argued that mathematics is simply a description of the real world. The area of a circle is equal to pi times the radius squared. This is a description, not an invention, some would argue. What do you think?

[Click here for an excellent video on this topic!](#)





We should also link this Area of Knowledge to reason as a Way of Knowing. Indeed, part of the universal nature of mathematics is due to the fact that it works according to deductive reasoning (see the section on deductive and inductive reasoning). This means that many people from very different backgrounds are able to follow mathematical arguments, as they all share this deductive ability. If you're thinking about discussing mathematics in your work you can use this feature to begin an argument about whether all people possess the same reasoning ability in the same degree. Some might argue that our reasoning ability fundamentally differentiates us from the rest of the animal kingdom. They might point to the clever things people have done using reason. But you could point to people who have a diminished capacity for reasoning, such as the mentally disabled, and ask if they are not human. Be careful with this, but if done well, an interesting debate is sure to follow!

Another discussion within mathematics concerns its relation to reality. After all, if we accept that mathematics is discovered rather than created, we have to deal with an awkward fact. Pure mathematics does not rely on any prior sense perception! Isn't it strange to think that something can be discovered entirely without the senses? How might we explain this? You could contrast this with the appliance of mathematics to the real world. This application typically happens in the natural and human sciences.

Remember: If you want to talk about mathematics consider whether it is invented or discovered, whether it is certain or true (or both!), and whether mathematics is independent of culture.

The Natural Sciences

The natural sciences aim to investigate the natural world around us. This AoK's methods include observation and testing of hypotheses: the specific method. One of the most interesting questions in this field is about the removal of the human element. Scientists try to design experiments to reduce the effect that the human observer has on the outcome. Asking how possible this is in different fields can tell us something about the strengths and weaknesses of the natural sciences.



Science is different from mathematics in that it combines both sense perception and deductive reasoning. Reasoning must be present in relevant argumentation, but theories must also be able to survive the test of real-life experimentation or observation. This combination allows us to consider interesting questions about the nature of science. The line between the human and natural sciences is a thin one, and one often debated. Indeed, the very name 'natural sciences' contains an implication that human beings are not within the realm of nature. Does this make sense to you? Do you think that this assumption is an objective one or has cultural roots? If science contains cultural assumptions do these impact its supposedly objective work? Thinking about these questions will help you form an argument in your ToK essay or presentation. You can even think about how the different AoKs interact with each other. If science is non-human, because it is objective, then should it be constrained by ethics? What justifies a scientific experiment and what ethical concerns might stop such an experiment?

Human Sciences

For IB students, the human sciences include many of your group 3 subjects. The human sciences study the reality of being human. That means that they look at things like the social aspects of human life and how people live together. They also explore culture and human thinking. Subjects like sociology, politics, anthropology and psychology fall into this category.

So what are the differences between human science and social science? Well, one of the big differences is what we mean when we use the word 'science' in each context. In a way, human sciences do count as science because they use





the scientific method. That is, they create a hypothesis and then test it against reality. A psychologist might hypothesise that classical music tends to make people perform better in IQ tests. They could devise an experiment, try this out and find that indeed, if people listen to Mozart before a test they tend to score a higher mark on average. The use of hypothesis and experiment might remind you of the natural sciences. There are however some key differences to consider. For example, the psychologist would struggle to call this a 'law', in the way that a scientist would be able to for the law of gravitational attraction. This is partly because the psychologist could not reliably show that all people were affected the same way by this music. Then there would be questions concerning the ways in which different cultures respond, and whether such responses change over time. The predictive accuracy of the human sciences tends to be lower than in the natural sciences. Although this is a controversial topic, it is one you could certainly explore.

You might also want to consider what constitutes proof in the human sciences. Often we find that the human sciences will rely on statistical probability. In the natural sciences there may be more times where that probability approaches one hundred percent. Do you think there are any problems involved in using statistics in the human sciences?

History

History as an area of knowledge does not simply refer to everything that has ever happened. Instead, it is about the past that has been recorded by human beings. One of the major debates that you should consider in history is interested in the idea of the 'historical fact'. At first it might seem obvious what this is – a fact telling us something that has happened. But think about it... there is a lot of human involvement in defining the past when it comes to history. You might have heard about the notion that the winners of a war write the history books. What do we think they are likely to record? In this case, what does this mean for the certainty of historical fact? You should ask yourself whether it is possible to be objective when writing about history. The historian Max Weber thought that it was not possible to write historical 'fact'



from an objective standpoint. He argued that in every situation there were endless things that could be described, and the fact one has to choose which ideas to discuss already stops one from being objective. After all, focussing on the role of one person rather than another will affect how the past is perceived.



Max Weber

We can also draw attention to another interesting debate in history. Rather than considering which facts are being described, we might consider whether or not we can have any facts at all. If we think of an historical event, such as a great war, we might think that we know a lot about that war. But ToK invites you to ask how we know such things. Did you see the war, using your own senses? If not, how did you find out about it? Perhaps you heard the information from a friend or a family member, but how reliable is their knowledge? Maybe you read about the war in a textbook? But who wrote that book and for what reason? Do you think that textbooks in North Korea will detail the mass starvations that have happened to their people? Are your textbooks more reliable? Why? These are the sort of questions that show that you are reflecting critically in your ToK work.

THE AREAS OF KNOWLEDGE: THE ARTS, ETHICS, RELIGIOUS KNOWLEDGE, INDIGENOUS KNOWLEDGE





The Arts

What is art? What are 'the arts'? If you saw an oil painting you would probably know that it is art, but how do we decide on such things, and how do we create a category called 'the arts'? Well, these questions might seem abstract or unanswerable, but, as always, the IB Organisation has the answer! When we think of the arts in ToK we are talking about the creative productions of humans. This is very broad but when things are broken down we see that 'the arts' encompasses the visual arts, the performing arts and the literary arts. So actually, it is not too difficult to get an idea of what the arts usually involve. There may be some argument about specific cases, but defining the arts as, 'the creative production of humans, encompassing the visual arts, performance and literature', is a good starting point.

If the natural sciences explore physical reality, then what do the arts examine? Well, while the natural sciences look outward, the arts look inward. They try to explore the experience and reality of being human – the arts are a way to explore what it is like for people to live life. Of course, this may involve looking outward as well. A landscape photography, for example, necessarily uses nature to convey its meaning. But its meaning is about human experience because the photographer is making a statement about what matters, in his or her opinion. That opinion is a human one and thus taking landscape photo is a statement about what matters to humans (or at least to one of them).

The arts have an interesting position within human knowledge because they are a part of culture, which is shared. However, art has subjective elements and a unique meaning for every observer. Three people may listen to the same piece of 'sad' music. They may all agree it is sad as a result of certain objective features that we notice in music that provoke the same feelings in many different people. Perhaps the piece is particularly slow, contains many minor chords, and so on. However, one of the listeners may say that the artist who wrote this was certainly experiencing despair. Another listener may say that the music was melancholic. The third listener may feel that the piece captures the idea of rejection. Therefore, each listener has their own interpretation. Just as an artist selects notes which seemed right, each listener chooses the



Ethics

What does it mean to be ethical? You might say being ethical means making moral decisions. That is a good connection to recognise, but does it really answer the question? What does it mean to make moral decisions? It might sometimes seem that in ToK one question just leads to another – what's the point?! But in fact that is the point. For without asking these questions, we cannot meaningfully say that an action is ethical. Until we really uncover what these things mean, they won't mean anything when we claim them. So, what is ethical knowledge?

Ethical knowledge is often seen as separating humans from animals. This gives us a clue as to what being ethical means. In nature we don't normally think of the ideas of 'right', 'wrong' and 'justice' as being important. What does a lion or an eagle know of justice. It might be these ideas of right and wrong that are the defining factors of ethics. However, there is another extremely unusual thing about ethical knowledge. It is the only kind of knowledge which, once obtained, commands us what to do. For example, if I think it is wrong to steal a Koala bear from the zoo, then I necessarily shouldn't steal that cuddly critter. The fact that it is 'wrong' makes it clear how I should behave. No other form of knowledge contains these commands about what we should do, or what Kant calls our 'duty'. This also raises questions about whether morality is objective or subjective.

If you're asking about whether ethical rules are created, rather than discovered, then another question arises. Some people would ask if moral rules really exist at all. Perhaps they are not really a type of knowledge at all. Maybe ethical thinking is created by society to control individuals and make sure they behave. Perhaps they should be ignored when this is beneficial. You could strengthen this argument by pointing out that ethics don't exist 'out there' in the universe, in the same way we think scientific facts do. But perhaps a counter argument might be that by our shared understanding and belief in ethical systems, they are just as real as our belief in stars, trees or the moon.



This debate raises a very interesting question. Even if we accept that ethical knowledge is 'real' in some sense, we also should recognise that ethical ideas are not fixed. It is likely that in many years our understanding of the relationship between the radius and areas of a circle will be more or less the same, as it has remained constant for thousands of years. But will our ethical knowledge stay the same on such issues as abortion, gay marriage and crime and justice? It seems very unlikely, in that sense ethics are flexible. There is an ethical question which addresses the ethical relationship between the individual and society: when, if ever, should you violate ethical rules? Questions such as this can be an excellent driving force behind a ToK investigation.



Religious Knowledge

Religion is an interesting topic to study within ToK. You may find in class, and even in your essays and presentations, that it can be difficult to approach. ToK is by its nature a critical subject. However, religion is something many people feel very strongly about. While always showing sensitivity, you should not avoid discussing or being critical of religious knowledge systems. In fact, it is very important that we examine religious belief critically. After all, religion provides a fundamental background of knowledge for some people, and everything else that they believe is seen in this religious light. As such, it is important that we open up these deeply held beliefs to critical examination.



What is the purpose of religion? What can religious knowledge systems tell us about the world? Primarily, they are intended to answer the really important questions about the meaning and purpose of human life. What are we here for? How were we created? How should we try to live? These are all questions that the most popular religions in the world try to answer.

It is important to recognise the vast diversity in this Area of Knowledge. A silly mistake would be to talk as if religious belief systems were all the same. It is true that most of the world's religious believers follow a belief system which is monotheistic and has its roots in Judaism. However, each of these systems is different and, importantly, there are many religious systems outside of this tradition. So how do we classify and think about these different systems of belief?

We can break up people into groups: **theists** believe that at least one deity exists, **atheists** reject the idea that deities exist, and **agnostics** are those who neither believe, nor disbelieve in the existence of deities. The theists can then be broken up into smaller groups. **Deists** are a category of theists. They believe that God/s set up the universe and now do not interact with it, but simply watch it unfold. **Pantheists** believe that the universe is divine, that the universe itself is divine and thus is, in some sense, God. **Monotheism**, strongly contrasts these previous views by describing the existence of a single, all powerful God. Such a God is found in Islam, Judaism and Christianity. Richard Dawkins describes some of these inclinations in this video – remember to always be aware of and sensitive to the personal perspective of an individual delivering information on this topic.

Indigenous Knowledge Systems

Indigenous knowledge systems look at knowledge that is unique to a particular culture. It is important to recognise that indigenous knowledge systems are constantly changing. They change because humans are not perfect at preserving and transmitting entire systems of knowledge used by a culture. Indigenous knowledge systems as cultures interact with each other as information is passed back and forth and new ideas take hold and influence the beliefs of the



day. We might consider how the 20th century significantly changed the culture of the Maori people of New Zealand. Similar changes happened worldwide for indigenous cultures in Canada, Australia, Africa and so on. Indeed, in 2014, one of the world's last 'uncontacted' tribes emerged from the Brazillian rainforest, likely due to pressure from drug traffickers and illegal loggers. Such contact means that indigenous knowledge systems tend to be a mix of traditional and knowledge structures, and well as knowledge inherited from cultures more heavily influenced by global communications.

There are two interesting ways of thinking about this AoK that could be used as a starting point for discussion in your essays or presentations. One way of discussing this AoK would be to talk about the diversity of indigenous knowledge systems in the world. It may not be immediately apparent why we should spend time trying to understand the variety of knowledge systems in the world. After all, we already have a great deal to think about with the AoKs already covered. How and why should we add to these all the unique systems that people all over the world use? However, the fact that there are so many ways of understanding reality cannot be overlooked. Fully embracing this AoK reminds us that our own perspective is just one amongst a truly huge number. Your subject studies in the IB will tell you that the world is full of incredible things to look at. ToK will tell you that the world is full of incredible ways to look at them.

A second way of examining this AoK is to really try to understand a particular indigenous knowledge system. This will be a challenge, but it could make for some truly amazing ToK work. Thinking about how native people of Alaska see the world would really show that you understand the value of ToK. How would you evaluate such a thing? It would be no easy task but we can start thinking about how other people see the world by asking a few primary questions. How do these people communicate? How do they make decisions? What are their thinking processes? How do they view knowledge? Identifying the similarities and differences between your own thinking and those of other people will show a high level of awareness when it comes to ToK issues.



What do you know?

There you have it. We have finished looking at the Areas of Knowledge. If you managed to read through the whole ToK-guide, I'm impressed. If you understood most of the content, then that's even better. Best of all is if you read all blog posts on Tok on our website. If you managed to do that then you are really in a good position to master your ToK work. We have discussed the secrets to tackling ToK, talked about shared and personal knowledge, and covered knowledge questions and knowledge claims. We talked about language, sense perception, emotion and reason as Ways of Knowing, and then continued our discussion with imagination, faith, intuition and memory. We then critically explored the best ways to interrogate the different Areas of Knowledge. We learnt how to ask questions about areas of knowledge which are critical and interesting. Finally, we looked at the different Areas of Knowledge: mathematics, natural science, human science and history, the arts, ethics, religious knowledge and indigenous knowledge. And that's it! If you really understood all of that then you should have no problem with your ToK work. The things we've discussed are an excellent starting point and now your job is to go away with two things: curiosity and knowledge. Use your curiosity to find a topic that interests you. Use your knowledge to guide your research, and be critical. If you do all these things you will ace your ToK work and become a ToK master in no time at all!

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