OXFORD IB PREPARED

THEORY OF KNOWLEDGE

IB DIPLOMA PROGRAMME

Bill Roberts

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Dedication

To David, who's always accepted me for me and supported my decisions and ambitions, despite the fact that they often took time away from us - I will always be a better person with you than without you.

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Contents

THE IB DIPLOMA PROGRAMME

It is more than 50 years since the IB Diploma Programme began and in that time many changes have taken place. However, the IB Diploma Programme theory of knowledge (TOK) course has remained at the centre of the programme and it is as relevant today as it was 50 years ago. Along with the creativity, activity and service (CAS) component and the extended essay it makes up the core of the programme.
Over the years, many different interpretations have been given of what makes these parts of the Diploma Programme the core, but the principal behind them is that together they contain the skills and qualities you will need to navigate your academic world and the wider world beyond. These parts of the course are supported by the learner profile and the approaches to teaching and learning (ATLs) which further emphasize the qualities and skills you will need. The diagram of the IB Diploma Programme highlights this.

The IB Diploma Programme

One interpretation of what connects the core areas is that they focus in different ways on what it means to be an ethical, reflective, experiential learner. The importance of these skills and qualities remains as true today as it was when the IB Diploma Programme was first set up. It is these skills and qualities that are the focus of this book.

1 TOK: AN OVERVIEW

In this chapter you will:

- ✔ begin by considering the main purpose of TOK
- ✔ be introduced to the layout of the book
- ✔ be given an overview of assessment
- ✔ consider the role of TOK concepts
- ✔ learn about the areas of knowledge and the themes
- ✔ be able to reflect on the role of the knowledge framework
- ✔ have the opportunity to test some of your skills and demonstrate the qualities needed by a TOK student.

INTRODUCTION TO TOK

This book works with the idea that TOK gives you skills and qualities in two broad areas.

- The first aim of the TOK course is to give you a better understanding of the academic world you inhabit, mainly focused on the learning you undertake in school. The most commonly held definition of TOK is the idea that it is the "How do you know what you know?" course and that it is asking this question of all the academic subjects you encounter in school. This means that there should be a strong connection between what goes on in your regular classroom and within the TOK classroom. The aim of TOK is not to teach you more academic content, but for you to understand why you have been learning that content and to understand its nature. It asks questions of that content in terms of concepts such as justification, reliability, usefulness, certainty, value and perspectives. It should be seen as complementing your regular classes. Overall, the combination of TOK with your academic subjects aims to give a complete picture. This is as true for you today as it was when the Diploma Programme started over 50 years ago.
- The second aim is to give you a skill set to navigate the world of information and knowledge that you inhabit. In addition to what is learned in school, students have always had a variety of ways of accessing knowledge including through family, cultural practices, libraries and media. However, within this context there have been major changes. With the first use of the internet in the mid-1990s, via the ubiquitous use of this technology in schools in the early 2000s, through to it being available through a smart phone wherever and whenever it is required, the quantity of information and knowledge available to everyone has radically increased. Media sources regularly talk about the concept of fake news and the idea that we are in a post-truth era—so the need for you to be able to process and make sense of information and knowledge has become even more vital today than it was 50 years ago.

THE AIMS OF THIS BOOK

The primary aim of this is book is to help you and your teacher navigate your way through the two final assessment tasks for TOK, with an emphasis on the skills and qualities needed. However, this book also recognizes that the importance of TOK goes beyond a final set of grades and that the skills and qualities required will continue to be useful a long way beyond your study of the IB Diploma Programme. Ultimately, it will help to build skills and qualities in you that will be useful for many years to come.

This book is written primarily with you as students in mind, but it should also be of use to teachers who are also learners. The aim is that it can help you as a way of navigating the course and then explicitly support the final assessments.

There are three main sections in this book:

- an overview of the areas of knowledge (AOKs) and the themes
- the writing and assessment of the essay
- the writing and assessment of the exhibition.

Table 1.1 gives an overview of the two assessment pieces associated with the course.

	Internal or external assessment	Marking	Focus	Percentage
TOK exhibition	Internal assessment (IA)	The exhibition is marked by teachers and moderated by the IB	Themes	33%
TOK essay	External assessment	The TOK essay is marked by examiners employed by the IB	Areas of knowledge	67%

▲ **Table 1.1** Summary of TOK assessment pieces

THE BASICS OF TOK

TOK is about exploring knowledge. However, to provide a more accessible structure for you the major focus is on two fundamental structures of TOK, called the areas of knowledge and the themes. Each of these is focused on a specific assessment task. To look at these in depth, the knowledge framework is used, which is made up of knowledge questions. To ensure that there is coherence in the course there are TOK concepts which you will recognize as ideas that run throughout the course. These parts will now be introduced in more depth.

The TOK concepts

Throughout the TOK course various big ideas will be considered. These are called TOK concepts and are a main focus of the course. It is not possible to give a definitive list here as the number of relevant concepts is large. The *Theory of Knowledge Guide* (2020: 6) lists 12 concepts that have particular prominence. These are set out below.

Evidence	Explanation
Truth	Objectivity
Certainty	Perspective
Interpretation	Culture
Power	Values
Justification	Responsibility

Below are another 30 examples of concepts that link to TOK, which should provide you with a few more ideas.

A common feature of determining if something is a TOK concept is that it impacts the production, distribution or acquisition of knowledge.		
Methodology	Usefulness	Coherence
Reliability	Understanding	Manipulation
Validity	Creativity	Bias
Trust	Complexity	Proof
Paradigm	Quantity	Verification
Context	Equality	Generalization
Credibility	Precision	Application
Worth	Authenticity	Integrity
Measurement	Relevance	Consequences
Quality	Analysis	Prediction

▲ **Table 1.2** Examples of TOK concepts

The areas of knowledge

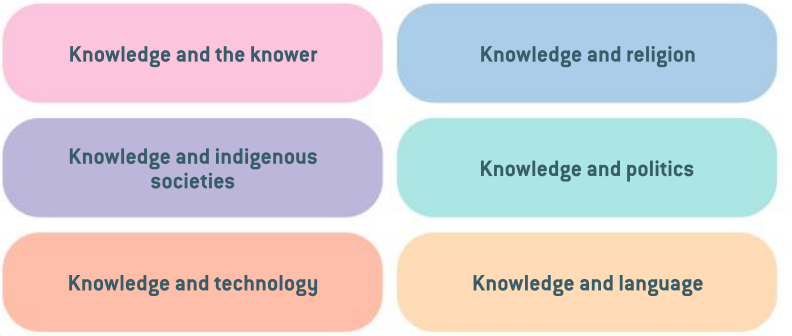
To provide some focus for TOK concepts we look at how these big ideas apply in your own learning of traditional academic knowledge. Your learning is split into five parts, called areas of knowledge (or AOKs).

The areas of knowledge are shown here.

In this course all five areas of knowledge must be considered. The assessment task for the areas of knowledge is an essay that counts for 67% of the final grade and is assessed externally. This means that a teacher supervises the writing of the essay, but does not mark it; it is marked by an examiner employed by the IB.

The themes

Along with academic knowledge, TOK concepts are also looked at in other less formal ways in which you explore knowledge. Both of these aspects are considered within the TOK themes. There are six themes.



You will study three themes. Knowledge and the knower is compulsory and studied by all students. Your teacher will decide about the other two. These three themes are primarily assessed in a task that is an exhibition. It counts for 33% of the final grade and is assessed internally. This means that your teacher supervises the creation of and reflection on the exhibition, and also gives the commentary associated with it a mark; a sample of the exhibitions from any particular school is then selected by the IB and that sample is checked by a moderator who is employed by the IB.

The knowledge framework

What has been outlined so far does not give much structure to the course. The IB suggests that both the areas of knowledge and the themes are looked at through specific aspects. These four aspects (described below) make up the knowledge framework.

- **Scope**—this includes how each theme or area of knowledge fits within the totality of human knowledge and also considers the nature of the problems that each theme or area of knowledge faces and tries to address them.
- **Perspectives**—this includes reflection on the student's own perspectives, how different people or groups approach knowledge, historical perspectives and how knowledge changes over time.
- **Methods and tools**—this includes the establishment of traditions and practices, methodologies employed by formal disciplines and the use of cognitive and physical tools that help us to produce knowledge.
- **Ethics**—this looks at how ethics and ethical considerations have an impact on inquiry in different areas of knowledge and themes, including the relationship between facts and values, and questions relating to inequality and justice.

(Based on the *Theory of Knowledge Guide* 2020: 12–13.)

Knowledge questions

To help you understand what these four aspects mean and to provide further focus, knowledge questions are used. These are questions that require exploration and analysis and are often based around the concepts—it is the TOK concepts that help to ensure that they are knowledge questions rather than just "big questions". The answers to these questions are often wide-ranging and can be seen from a number of different points of view; they are contestable.

You will now see what knowledge questions look like. The stimulus for thinking about them can come from a wide variety of sources. In this case, cartoons will be used. To demonstrate the full possibilities, in the following section there is one cartoon that links to each area of knowledge and each theme. An aspect of the knowledge framework and a specific knowledge question have been chosen. Ultimately, a response to the question focused on the concept and linked to the cartoon could be made.

Theme: Knowledge and the knower

Concept: Responsibility
Aspect: Ethics
Knowledge question: Are there responsibilities that necessarily come with knowing something or knowing how to do something?

▲ Figure 1.1

Theme: Knowledge and language

Concept: Understanding
Aspect: Perspectives
Knowledge question: How does language influence our understanding of knowledge?

▲ Figure 1.2

Theme: Knowledge and technology

Concept: Interpretation
Aspect: Scope
Knowledge question: To what extent is the internet changing what it means to know something?

▲ Figure 1.3

Theme: Knowledge and religion

Concept: Explanation
Aspect: Methods and tools
Knowledge question: What is the role of analogy and metaphor in the acquisition of religious knowledge?

▲ Figure 1.4

▲ Figure 1.5

Theme: Knowledge and politics

Concept: Justification
Aspect: Perspectives
Knowledge question: What kinds of knowledge inform our political opinion?

▲ Figure 1.6

Theme: Knowledge and indigenous societies

Concept: Power
Aspect: Methods and tools
Knowledge question: What is the role of oral tradition in enabling knowledge to be handed down through generations?

▲ Figure 1.7

Area of knowledge: Mathematics

Concept: Reliability
Aspect: Scope
Knowledge question: Does mathematics only yield knowledge about the real world when it is combined with other areas of knowledge?

▲ Figure 1.8

Area of knowledge: The arts

Concept: Authenticity
Aspect: Methods and tools
Knowledge question: Does sense perception perform a radically different role in the arts compared to other areas of knowledge?

▲ Figure 1.9

Area of knowledge: History

Concept: Certainty
Aspect: Scope
Knowledge question: Is certainty about the past more difficult to attain than certainty about the present or future?

Area of knowledge: Natural sciences

Concept: Values
Aspect: Ethics
Knowledge question: Is science, or should it be, value-free?

▲ Figure 1.10

Area of knowledge: Human sciences

Concept: Evidence
Aspect: Scope
Knowledge question: How do we decide whether a particular discipline should be regarded as a human science?

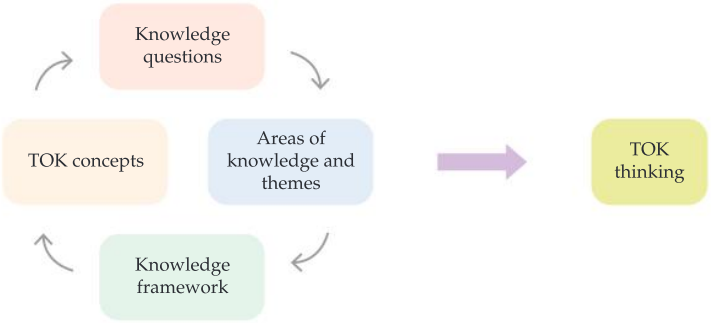
You do not need to formulate knowledge questions for yourself, but you will meet them throughout the course as a means by which the course is taught. They have a significant role to play in both assessment tasks.

▲ Figure 1.11

SUMMARY

TOK is made up of an interaction of four major parts.

- The course is made up of **areas of knowledge** and **themes**.
- Each of those areas of knowledge or themes is examined through a **knowledge framework** that has four aspects.
- To help you see the area of knowledge or theme through the aspect in the knowledge framework, **knowledge questions** are asked. These knowledge questions explicitly deal with **TOK concepts**.
- It is exploring the answers to these knowledge questions that starts the process of TOK thinking.
- The cyclical nature of this process is shown in Figure 1.12.



▲ Figure 1.12 The four parts of TOK

EXERCISES

You can consider some ways in which the four parts of TOK work together using the following example exercises. This will allow you to do some TOK thinking. The exercises are outlined first and example responses follow.

EXERCISE 1

Below is a brief description of part of a political speech from Jacinda Ardern, prime minister of New Zealand.

The speech was given on 18 March 2019 in response to the massacre that took place at two mosques in Christchurch, New Zealand, on 15 March 2019. A man who is identified as a white supremacist has been arrested. To deny the gunman notoriety, the prime minister stated: "You won't hear me speak his name".

Using the theme knowledge and politics from the *Theory of Knowledge Guide* (2020) choose an aspect of the knowledge framework. Now select one of the knowledge questions.

Answer the knowledge question using the political speech as evidence.

Now repeat the process for a political speech of your own choosing.

EXERCISE 2

Select a theme.
Choose one of the aspects from the knowledge framework.
Now select a knowledge question.

Find an example that will help you to answer the question and then explain how the example helps you to do this. There are many examples you could use, but something contemporary and linked to a real-world event would serve you well.

EXERCISE 3

Select an area of knowledge.

Find an example from your academic studies of something that interests you in that area of knowledge. Now choose an aspect from the knowledge framework and explain what your example tells you about the importance of the aspect.

EXERCISE 4

Find an example that interests you. This should be something that is contemporary and of which you have some knowledge.

Choose an aspect from the knowledge framework.

Explain which themes and areas of knowledge would help you to explore this further.

Here are four examples of how the exercises might be completed.

EXERCISE 1—exemplar response

This example will be considered through the aspect of ethics in the knowledge framework and specifically will consider the question: "On what grounds might an individual believe they know what is right for others?"

This political speech was given at a difficult time in New Zealand's past. In making the speech the prime minister is speaking to a number of different audiences with a number of different perspectives. She needs to show solidarity with and care for the people who have been affected by this tragedy; she needs to show that the government is taking a stand on this and she needs to show that the government is going to do something to ensure that an event like this does not happen again.

Overall, Jacinda Ardern needs to show that she is "doing the right thing". This is applying the idea that ethical decisions are made on the basis of what a majority wants and that this should at the very least appear to come from the heart of the person saying it. It would also agree with what a number of other cultural factors suggest—for example, two of these factors are the religion and the values on which the country is built. However, there is also a political element to this as the prime minister is also trying to change the country's legislation on gun laws, to which there is some opposition. Ethically this might be defensible from the perspective of the greatest good for the greatest number, but that would require absolute proof of a majority. Also some would argue that it is not a majority who make a decision as the majority do not have enough information or knowledge to do so. This is why many laws that are passed by government are not made by referendum. Overall it does raise a series of ethical questions.

Now try this yourself, using a different political speech.

EXERCISE 2—exemplar response

One possibility here is to look at the theme of knowledge and language, the aspect of scope and the knowledge question: "If people speak more than one language, is what they know different in each language?"

A number of good examples of this are demonstrated in the TED talk by Lera Boroditsky called "How language shapes the way we think" in the TED Women 2017 series. In the talk Lera Boroditsky gives examples where groups of people have a different way of distinguishing left and right, different ways to organize time, different ways of distinguishing between colour, different descriptions if the language is gendered, and different experiences of how language affects blame, punishment and eyewitness memory.

EXERCISE 3—exemplar response

This exercise can be illustrated using the human sciences as an area of knowledge and sociology as a discipline in that area of knowledge. The example chosen is the idea that there is evidence to suggest that gender identity is not a binary concept (male and female) but is more fluid than this. An individual can identify as male, female, gender fluid or gender queer, for example. If you want to know more about this you can watch the TEDx talk by Margaret Nichols called "Beyond the gender binary". In terms of perspectives it might be interesting to consider how we deal with the idea that in the past gender was seen as binary and anything other than this binary was seen as a mental disorder. Hence our knowledge of gender has changed. This leads us to ask: what we do with what we once thought was true? Is it as simple as admitting that knowledge in this area is in some way provisional and therefore change can happen whenever—or are the barriers to change higher than this? The idea of gender identity is based on how we feel not what we observe. This might raise discussion about the role and security of observation. It might lead to a conclusion that observation is important but that it needs to be used in conjunction with other ideas. It could also raise questions about the influence of culture on aspects of the human science. The position of Margaret Nichols is from a specific cultural perspective. There could be discussion about how much that influences, and indeed should influence, what people believe.

EXERCISE 4—exemplar response

Let's take the example of driverless cars and what needs to be in place for them to be allowed on the road. This will be considered through the aspect of scope.

Knowledge and the knower—discussions could include whether this is a question of "knowing how" or "knowing that"; it is also about the extent to which we as individuals care about this knowledge.

Knowledge and technology—there could be discussions around the idea of the extent to which the car itself has knowledge and if so to what extent it then has responsibility for that knowledge.

Natural sciences—there could be discussions about the extent to which we trust the scientific knowledge, given that the majority of the public do not have the detailed scientific knowledge needed to make a judgement.

Mathematics—there could be discussions about why the mathematics behind the science is so important and the idea that this is an example of mathematics being applied; this could be interpreted as an example of mathematics producing knowledge of the real world.

2 THE AREAS OF KNOWLEDGE: AN OVERVIEW

In this chapter you will:

- ✔ be introduced to the areas of knowledge
- ✔ be given the chance to undertake some work with each area of knowledge
- ✔ have the opportunity to reflect on different worked examples
- ✔ be able to consider further the role of the knowledge framework and knowledge questions
- ✔ undertake some thinking about the areas of knowledge.

INTRODUCTION

In this chapter you will focus on understanding the qualities associated with the different areas of knowledge; these qualities will be the main focus of your TOK essay. For each of the five areas of knowledge you will be provided with a brief overview followed by four stimuli that are relevant to TOK discussions. Each of these stimuli can be linked to TOK concepts and can be looked at through an aspect or aspects of the knowledge framework. Each has examples associated with it and within each of them there are thinking points that are an opportunity for you to engage further and undertake some TOK thinking. These thinking points come in different forms and can be categorized as follows.

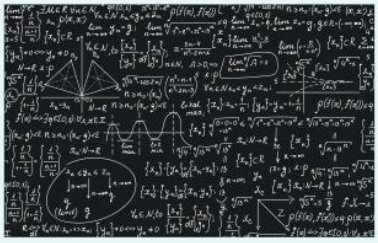
Reflecting on your own academic experiences

Applying academic knowledge you have learned in a different context

Learning something new to understand a different position

As you can see, all of the categories are linked directly or indirectly to what could be called academic knowledge, which can be defined as the knowledge you learn formally in a school setting. The focus is therefore on academic qualities and skills. By engaging with the thinking points you will learn more about the qualities of that area of knowledge. After the thinking point there is a short list of knowledge questions that can be applied to the reading and work you have done. Answering this style of question produces the ideas that are central to the essay assessment task in TOK and this is how your thinking skills become visible.

MATHEMATICS



On a very simple level, mathematics is about the science of numbers, but even within that very basic statement there is room for debate. Many dictionary definitions start off like this and the discussion that follows shows clearly why you should not use dictionary definitions in your essay—they are oversimplified and one-dimensional. Firstly, the idea that mathematics is a science is contestable. In some countries it is called mathematical science or an exact science but this supposes that some form of scientific method is at the forefront of what is done. Certainly mathematics is based on logic, but that does not mean that it follows a scientific method. If you talk to mathematicians or observe the work they do, then you will see that there is the need for creativity and imagination—attributes that might be more commonly associated with the arts. Thus trying to classify mathematics as an art or as a science does not fully make sense—it has characteristics of both.

Having brought into question whether or not mathematics is a science, you could also question the extent to which it is about numbers. If you think about the mathematics you have looked at in high school, then a proportion of this will be algebra. The reason for the move from number to algebra is the need to generalize. What you could now say is that the nature of mathematics and what mathematicians do are wholly related to finding patterns, both geometrically and algebraically, and then attempting to generalize these patterns. To take this further you can now look at some specific characteristics of mathematical knowledge.

Stimulus 1: Role of patterns and generalizations

The role of patterns and generalizations in mathematics is a fundamental one. In mathematics the way it works is that once you think you have found some sort of pattern, you then need to show this is true generally—this justification of the generalization has a degree of formality to it, which is called a proof. Within your own mathematics class you practise different elements of proof at different times in order that you can master these techniques. However, sometimes questions, problems and anomalies arise and it is in TOK where this might raise interesting thoughts and questions for you.

A good example of this is the Collatz problem or conjecture, which leads to what are sometimes called "hailstone sequences".

To create a "hailstone sequence" the rules are as follows.

1. Take any positive number.
2. If it is even then halve the number. If it is odd then multiply by three and add one.
3. Continue with this process until it no longer produces any new numbers.

THINKING POINT

Try creating a "hailstone sequence". Choose any five positive numbers, apply the rule and see what happens.

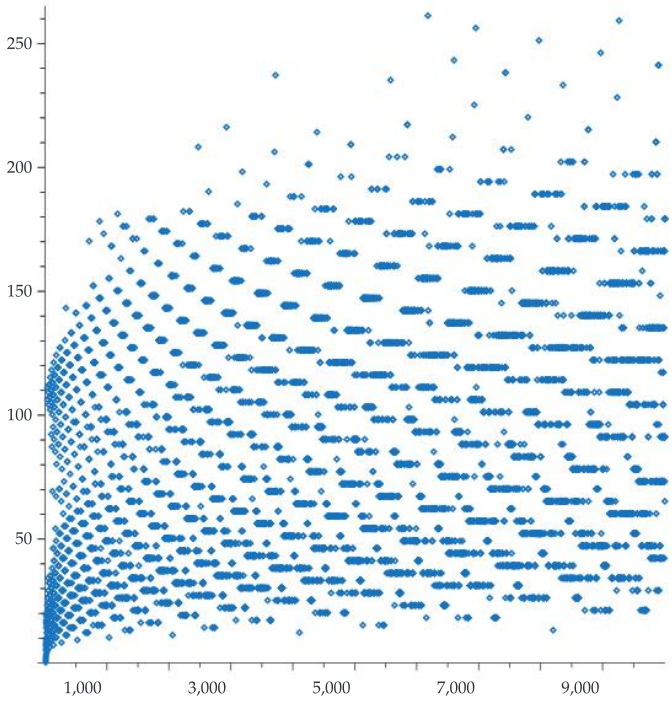
Discussion

What you should have found is that irrespective of what number you chose you will always end in the cycle {4,2,1} and never be able to break that cycle.

For example, if you start with 13, the result is:

$13 \rightarrow 40 \rightarrow 20 \rightarrow 10 \rightarrow 5 \rightarrow 16 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1 \rightarrow 4 \rightarrow 2 \rightarrow 1 \ldots$

It is possible to explain why the cycle {4,2,1} never changes but to prove all numbers end in that cycle is more difficult. You might say "it is obvious" but unless you can explain why, there is no justification to suggest it will always end this way; unless you can explain why formally, there is no proof. All numbers that have been tested so far end in the cycle {4,2,1} but no definitive proof has as yet been offered. This is why it is called a "conjecture" as opposed to a "theorem". Figure 2.1 is a graph showing the numbers between 1 and 9999 (x-axis) and the number of times you need to apply the algorithm for a specific number before you end up in the cycle {4,2,1} (y-axis).



▲ **Figure 2.1** The Collatz conjecture

Link to TOK concepts and knowledge questions

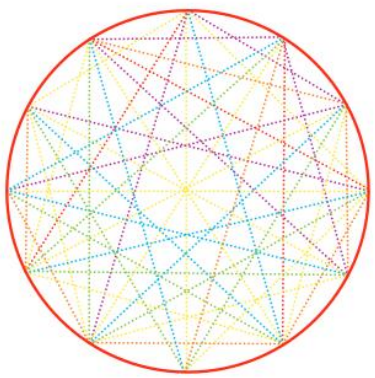
As you can see from this, generalization is an idea that impacts the production of knowledge within mathematics and so it could be seen as a TOK concept. Here are some possible knowledge questions you could ask and try to answer.

- Methods and tools: Why do we need generalizations in mathematics?
- Methods and tools: Is finding a pattern useful if we cannot prove the generalization?
- Methods and tools: What role is played by patterns in gaining mathematical knowledge?
- Methods and tools: What happens to results in mathematics that cannot be generalized?

Stimulus 2: Proof

From the first stimulus, you can see that not all mathematics is proven—mathematicians believe the Collatz conjecture is true, but it is not proven. This brings up a more general problem in mathematics: you need to be careful not to say that having a number of examples that follow a pattern can lead to a generalization. This can be seen if you consider what is called the mystic rose. The mystic rose is formed by joining together equally spaced dots placed on the circumference of a circle. The more dots, the more elaborate your mystic rose.

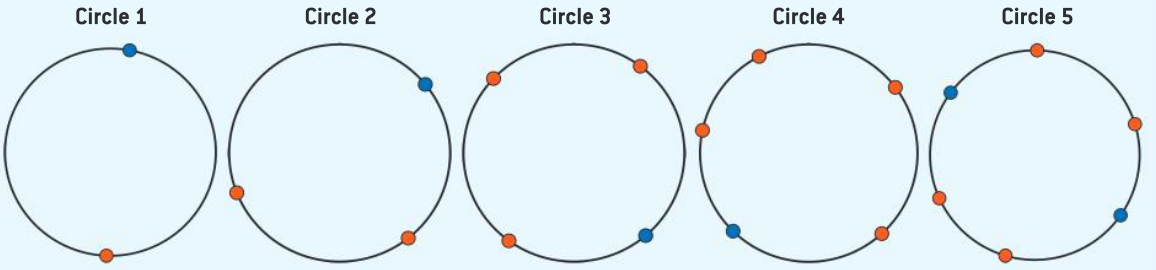
As you will see in the next thinking point, there is an interesting discussion to be had from the perspective of TOK in the pattern formed by the number of lines and the number of regions.



▲ **Figure 2.2** The mystic rose

THINKING POINT

For each circle join each dot to each other dot and then write down the corresponding number of regions formed.



Number of dots	2	3	4	5	6
Number of regions					

Discussion

What you should find for the first four circles is that the number of regions is consecutive powers of 2 and based on this you might be tempted to state this is the pattern. However, it is the result you gained for circle 5 that is worth further consideration. You may have convinced yourself that there are 32 regions, but in fact the maximum number you can get is 31. This disproves the "power of 2" result. In mathematics a single counterexample is all that is needed to disprove a result.

Therefore, you need to be very careful to ensure that mathematics is proven before you make claims about the certainty of mathematics. Assuming that a pattern will always continue does not constitute proof in mathematics and other than noticing a potential pattern it has limited value mathematically. Interestingly, there is a pattern that can be proven in the case of the mystic rose (you are not going to attempt the proof here). If R is the number of regions and n is the number of points on the circumference of the circle then the formula connecting them is:

$$R = \frac{n^4 - 6n^3 + 23n^2 - 18n + 24}{24}.$$

Links to TOK concepts and knowledge questions

This stimulus is raising questions about the nature of proof, which is important in both the production and acquisition of knowledge—so proof works well as a TOK concept. Here are some possible knowledge questions you could ask and try to answer.

- Methods and tools: How much of a pattern is needed to find a generalization in mathematics?
- Methods and tools: To what extent is mathematical knowledge secure?
- Scope: To what extent does mathematics deal with certainty?
- Perspectives: To what extent does it make sense to describe the study of mathematics as an art?

Stimulus 3: Theory versus application

You can now consider the binary question: Is mathematics discovered or invented?

In many ways this is a poor question because it pre-supposes that mathematics is one or the other. A better question might be: To what extent is mathematics discovered and to what extent is it invented? This allows both to have an influence. The reason the question is so important is that it directly links to the idea of theory and application. If mathematics is just out there waiting to be discovered then this suggests that there is still more theoretical mathematics in the natural world. If mathematics is invented then this suggests that it was invented for a reason, which is to be applied. As with all "black and white" arguments in TOK, the real argument is much more complex than this.

THINKING POINT

Reflect and write down some answers to the following questions.

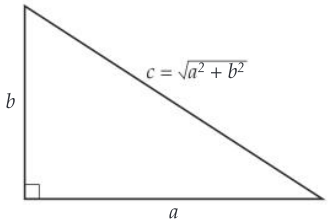
- What is the evidence for mathematics being invented?
- What is the evidence for mathematics being discovered?
- Do any of these arguments have counter claims?

Discussion

You can now consider how this works in practice. For ease of teaching, mathematics is sometimes split into two branches: pure mathematics and applied mathematics. The word "pure" indicates theoretical and you are interested in the mathematics because it fits with other mathematics and demonstrates that it is a coherent system of knowledge. This can be explained using two simple examples.

Example 1

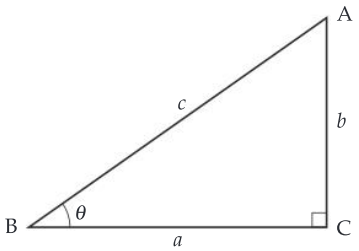
Consider a right-angled triangle.



You will probably know:

$a^2 + b^2 = c^2$

This is best known as Pythagoras' theorem or the Pythagorean theorem. If you now label one of the angles θ then you can work out the size of that angle using basic trigonometry.



Hence you would have:

$\sin\theta = \frac{b}{c}$, $\cos\theta = \frac{a}{c}$, $\tan\theta = \frac{b}{a}$

You can now put these results together as follows.

Starting with $a^2 + b^2 = c^2$

$$\Rightarrow \frac{a^2}{c^2} + \frac{b^2}{c^2} = \frac{c^2}{c^2}$$

$$\Rightarrow \left(\frac{a}{c}\right)^2 + \left(\frac{b}{c}\right)^2 = 1$$

$$\Rightarrow (\cos\theta)^2 + (\sin\theta)^2 = 1$$

$$\Rightarrow \cos^2\theta + \sin^2\theta = 1$$

The mathematics used in example 1 is known as a Pythagorean trigonometric identity. As you can see, the mathematics fits together without any logical contradictions to produce more mathematics and at this point no one worries about the application. For some students, working with aspects of knowledge to produce more knowledge is a valued and interesting way forward. However, for others, without an application for the result, the purpose is more difficult to appreciate.

Example 2

Consider the formula $P = P_0e^{kt}$. This is a basic formula that can help us with predicting population growth. In this case P is the population at any time t, P_0 is the population at the starting point, e is the number 2.7182818 … and k is a constant that needs to be found and is dependent on the population under discussion. This is a case of a model being developed and what you are then interested in is the answer to the question: how well does the model work? It is about the effective application of mathematics.

Links to TOK concepts and knowledge questions

This stimulus is raising questions about the nature of mathematical knowledge and in this case there are a number of TOK concepts that could be under discussion—these include justification, analysis, certainty and verification. Here are some possible knowledge questions you could ask and try to answer.

- Perspectives: To what extent is mathematics invented and to what extent is it discovered?
- Scope: How is the certainty of mathematical knowledge affected by the attempt to apply mathematics to the real world?
- Perspectives: To what extent could mathematics be described as the language of science?
- Scope: How much mathematics is there left to be discovered?

Stimulus 4: Cultural viewpoints

One of the interesting things about mathematics is that the answers do not vary when asked in different cultures. For example, the answer to adding two fractions together will be the same irrespective of where in the world it is asked. However, differences are found in using logic in games in what is often called recreational mathematics. In this section you will consider some of these.

THINKING POINT

This is a problem that can be traced back over hundreds of years. The problem is set up as follows. A man wishes to take a fox, a goose and a bag of grain across the river in his boat. The boat can only carry the man and one other thing. If the fox and the goose are left alone together the fox will eat the goose. If the goose and the bag of grain are left alone together the goose will eat grain. The fox has no interest in the bag of grain. How does the man transport all three to the other side of the river safely?

Discussion

Here is one of the possible solutions.

Journey 1: the man takes the goose across the river, leaving the fox and the bag of grain.

Journey 2: the man returns alone.

Journey 3: the man takes the fox across the river, leaving the bag of grain.

Journey 4: the man returns with the goose.

Journey 5: the man leaves the goose and takes the bag of grain across the river.

Journey 6: the man returns alone.

Journey 7: the man takes the goose across the river. All are now transported safely across the river.

What is interesting is that this problem has reappeared in many different forms across the years and this is dependent on the time period and the culture. Sometimes the problem is the same but with different animals and items, and sometimes more animals, humans and items are involved with slightly different rules. Sometimes the boat becomes a bridge. These differences change how the logic is used and it is possible to recreate the problem such that logically and therefore mathematically there is no solution possible.

Culture often influences games of chance. This is where you have to produce a strategy to optimize your chance of winning. Common games include Poker, Twenty One, Pontoon, Blackjack, Craps, Farkle, the Monty Hall door problem and Backgammon. The way you decide on the strategy to win is informally based on probability. As Ascher (1991) suggests, these games appear across time periods and across cultures. For example, the game of Dish is widespread within Native American cultures including the Cayuga, the Seneca and the Cherokee. In this game the basic equipment is a dish in which objects are placed, where the objects are identical and each object has two distinguishable faces. The idea is that the dish is shaken so the objects resettle and the way in which this happens determines the number of points won and whether the dish must be passed on to another player. The outcomes are such that the lower the probability, the higher the number of points.

The Māori people play the game of Mu Torere, which is played on an eight-sided star. Objects are placed on the points of the star and can be moved to either the centre of the star or an adjacent point on the star if it is free. The aim of the game is to block your opponent. Rather than an exercise in probability, this is an exercise in logical strategy and therefore it is the logic you learn through mathematics that would be relevant. Similarly, Mancala is the generic name given to a number of board games played throughout the African continent, which include

▲ **Figure 2.3** A Bao set

Bao played throughout Swahili-speaking east Africa, Gabata in Ethiopia and Wari in ancient Egypt. In this game, objects are placed on the board with each side of the board belonging to a different player. The idea is to capture the objects from your opponent's side of the board.

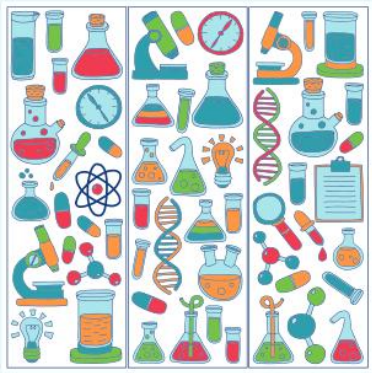
Hence mathematics and the logic you learn from mathematics are used as recreational tools and there is a degree of universality about this. However, remember that the context for how it is applied may be strongly influenced by culture.

Links to TOK concepts and knowledge questions

This stimulus is raising questions about the effect culture has on how we apply mathematics. The primary TOK concept under discussion is culture. Here are some possible knowledge questions you could ask and try to answer.

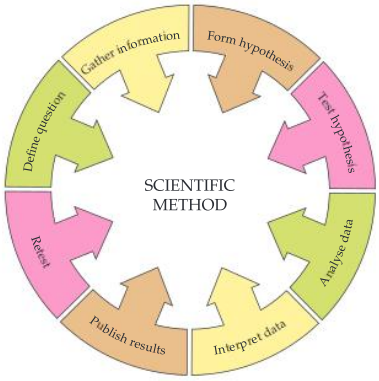
- Scope: To what extent can cultural dimensions be incorporated into logical thinking?
- Scope: How does personal experience play a role in the understanding of mathematics?
- Perspectives: To what extent does it make sense to describe mathematical knowledge as a cultural artefact?
- Scope: To what extent does the cultural application of mathematics provide evidence for the universality of mathematics?

NATURAL SCIENCES



The natural sciences are concerned with the knowledge about the natural world that can be explained through a scientific method. They most generally fall under the headings of biology, physics and chemistry. This area of knowledge is often seen as very secure and therefore if something is scientifically justified then it must be. However, this in itself raises a number of points for reflection and thinking. You can say that something is mathematically proven, but if you talk about something being scientifically proven, that means something different and most would argue that it is not possible in any absolute sense. Furthermore, the extent to which society questions things in science is dependent on what is being asked. For example, there is no debate about Einstein's theory of relativity among the general population and only a limited amount within the scientific community. With something such as global warming, there is quite a different scenario. People in the general population do not agree on the causes whereas the position of scientists is less diverse. Also, if science needs to progress and keep up to date as technology continues to improve then this means that there once was and will again be scientific knowledge that was once correct, but is no longer. This brings into question the actual security of scientific knowledge, so there are lots of interesting characteristics in the natural sciences to focus on from a TOK perspective.

Stimulus 1: Methods of producing knowledge in the natural sciences



Some of the aspects of the natural sciences that tend to be a focus of conversation in TOK are the purpose, reliability and status of the scientific method. The extent to which this is a single method or multiple methods that have similar features is certainly an area for consideration and discussion.

THINKING POINT

As a Diploma Programme student you will be studying a science subject at school and you will have undertaken some form of practical work fairly recently. Write down a summary of what you did in that lesson and the experiment that took place, then explain the results you found. How certain are you that these are the correct results? To help you with this final question, you could consider:

- the role of observation
- the role of theory
- the creation of a hypothesis
- the amount of data generated
- the form of that data
- the role of experimentation.

Discussion

Once you have reflected on the scenario, you should have come up with some thoughts that are directly linked to the scientific method. It is possible that you will have put this together in an order. For example, you might have started out by making a series of observations and from those observations you may have speculated how this might be generalized. You might test those observations further using some form of experimentation and then suggest that the generalization has some degree of validity. This would be called a scientific method. However, there is not a single scientific method. As a student you may well have started with previous theory—experiments in school rarely require no background information. Similarly, research scientists are experts in their field and therefore have a lot of background knowledge. Thus it could be argued that the starting point of a scientific method is theory and that the end point is a further substantiated or slightly refined theory. If you are doing research on black holes in space, you will be unable to perform physical experiments and that part of a scientific method will need to change. This is often replaced by mathematical models of the scenario. The scientific method is not a single method, but a range of methods in which the stages fit together in a logical sequence.

Links to TOK concepts and knowledge questions

This stimulus is raising questions about the term *scientific method* and pointing out that this is not a single method that is used repeatedly without consideration for what is being looked at. Therefore, the main TOK concept under discussion is methodology. Here are some possible knowledge questions you could ask and try to answer.

- Methods and tools: To what extent does it make sense to talk about **the** scientific method?

- Methods and tools: How does the use of a scientific method help us to produce reliable knowledge?
- Methods and tools: What role does mathematics play in producing knowledge in the natural sciences?
- Methods and tools: How do scientists ensure that scientific knowledge is as accurate as possible?

THINKING POINT

From your studies in the natural sciences, think about a theory where the information has changed. Explain what the theory is, what has changed and what led to it being changed.

Stimulus 2: "Wrong" science

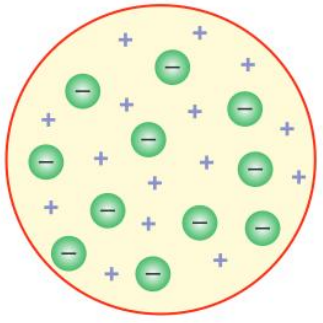
As technology continuously improves, the explanations offered by and the understanding of science change. By definition this means the explanation or understanding that has been improved upon or discarded is now "wrong". This raises questions about the status of knowledge in the natural sciences as "knowledge" and also about the certainty or security of that knowledge.

Discussion

In terms of the status of incorrect explanations, this depends on what you consider to be the definition of knowledge. For example, if we think of scientific knowledge as a way of "navigating the world"(the "world" in this case is being used metaphorically to represent ideas, concepts, theories and viewpoints that can be explained by science), then the old incorrect explanation was the best available at that time and it did allow scientists to "navigate the world", just not with total success. As science progresses and knowledge becomes more accurate, the ability to navigate the world improves and in the future may improve further. Thus you might find it helpful to think of scientific knowledge as the best explanation that there is at any moment in time.

> "The method of science is tried and true. It is not perfect; it's just the best we have. And to abandon it, with its skeptical protocols, is the pathway to a dark age."
>
> (Carl Sagan, astronomer)

This raises the concern about the extent to which current scientific knowledge can be trusted given that it has the potential to change as further scientific research is undertaken and technology develops. To help you work with this conundrum consider the following. The way scientific knowledge develops means that it does become more accurate with time, but those improvements are virtually always small and from the perspective of the general public often not noticeable. Consider how the models of the atom have developed. At the start of theorizing this aspect of science, the models developed were radically different (as can be seen from Figures 2.4–2.6).



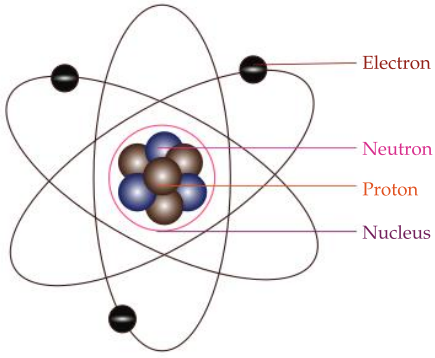
▲ **Figure 2.4** Thomson's plum pudding model

As years have passed, the models have become more sophisticated, but after the initial research the basic understanding has not changed—atoms are still built of protons, neutrons and electrons. What has happened is that technology has developed and further levels of explanation have been introduced. This is the story of science. What you have in science and what you understand in science is very secure due to the method that is required. Provided scientists are ethical (and those who are not are usually found out by the need for replicability within the scientific method) then the knowledge gained is absolutely secure in a real-world sense—that is to say that it is literally "the best we have"—the focus here is on the word "best". Knowledge on global warming has the same status as knowledge on Einstein's theory of relativity. It is reliable, it is the best we have and on a practical level it is correct. In 1962 Thomas Kuhn, a scientific philosopher, theorized a more complex version of this in his book *The Structure of Scientific Revolutions*, which is still available for those interested in finding out more.

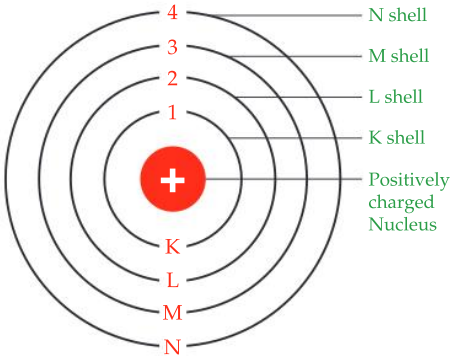
Links to TOK concepts and knowledge questions

This stimulus is looking at how science needs to be able to change in order to take account of advances in research and in technology. Two of the main TOK concepts under discussion are certainty and reliability. Here are some possible knowledge questions you could ask and try to answer.

- Scope: What role does technology play in helping scientific knowledge to progress?
- Methods and tools: What is the role of previous knowledge in the natural sciences in terms of gaining current knowledge?
- Scope: How does the idea of there being more than one scientific method link to the idea that scientific knowledge is the best explanation we have?
- Perspectives: To what extent can knowledge in the natural sciences be certain?



▲ **Figure 2.5** Rutherford's model



▲ **Figure 2.6** Bohr's model

Stimulus 3: Academic science and school science

If you consider knowledge in the natural sciences, and how that knowledge is created, it can initially be thought that what you do in school and what takes place in a university laboratory doing research are similar. However, is that really the case?

THINKING POINT

From the people you, your family or your friends know find someone who works as a scientist. Carry out a short interview with the person and write down the main points of what they have to do to be a successful research scientist. Then consider the similarities and differences between the science you do in school and the work of a research scientist.

Discussion

Reflecting on the purpose of both forms of science is a good place to start. The aim of school science is to make you understand the science itself, the skills needed to be a successful scientist and the importance of understanding science. School science is very much about understanding the science that has already been discovered. If you think about the job of a research scientist, it is often about trying to predict the future given a thorough understanding of the knowledge that is already known. It is school science that is the starting point for the research scientist having a deep understanding of what is already known in science.

Given that the purposes of school science and research science are often different, it should come as no surprise that many of the things that take place are different. Many ideas will have come up from your interview, but some of the differences are now briefly considered.

- In school science students are often working on the same thing. The position is very much about verifying what is already known and accepted. In a school science class, when you perform an experiment everybody is working on the same problem or a small range of problems. You are undertaking experiments in part to practise experimentation. For a research scientist it does not work that way. These scientists are likely to be working as part of a

community, but individuals will have their own roles to play. Therefore, the work they are doing is likely to be aimed at the same large goal, but they will each be contributing to a different part of it.

- In school science the answer is usually known. As the purpose of school science is to practise, it helps to know what the answer should be. In research science, as you are discovering new things about the world you may have a hypothesis about what might happen, but the actual result is not known.
- Both school science and research science have constraints placed on them, but those constraints are different. In school science you are constrained by a syllabus or a curriculum; it is the IB that informs your teacher about what you need to know to pass the final set of assessments. In research science the constraints are often connected to funding. A laboratory at a university has a research grant or a laboratory in a private company has a budget. The scientists involved in these projects cannot just research what they want to.

Links to TOK concepts and knowledge questions

The focus of this stimulus is the difference between producing knowledge in the natural sciences and acquiring knowledge. Both are working with a similar body of knowledge but that knowledge is used in slightly different ways with different emphases. The TOK concepts under discussion are focused on production and acquisition. Here are some possible knowledge questions you could ask and try to answer.

- Methods and tools: How does the idea of a scientific community ensure reliable knowledge within the natural sciences?
- Methods and tools: What role does the individual play in the production of knowledge in the natural sciences?
- Methods and tools: To what extent does imagination play a role in producing or acquiring scientific knowledge?
- Scope: What factors are necessary to produce or acquire reliable, accurate and comprehensive scientific knowledge?

Stimulus 4: Ethical concerns about knowledge in the natural sciences

As the natural sciences have a large element of human invention within them, there are many possible links to ethics. These could come from the ethics of how the knowledge is produced, how it is applied, how it is acquired and how it is communicated. There are two broad areas that are particularly rich for discussion and exploration in TOK. Firstly, there is the situation where something that is invented or discovered is then found to have other applications around which there are ethical concerns. Secondly, there is the situation where the behaviour of the scientist themself is potentially seen as unethical.

THINKING POINT

There are two possible activities here for you to reflect on.

A. Undertake some research of your own into discoveries in the natural sciences with unintended consequences. Make a note of your examples, what was unintended about these consequences and whether you think they leads to ethical questions.

B. Undertake some research of your own into situations where a scientist or group of scientists have been considered to act unethically. Make a note of your examples, what was unethical about them and what the outcome was.

Discussion

In terms of the situation with unintended consequences, the ethical question is: how far back in the chain of events does the ethical responsibility lie? Take the case of a bullet being fired from a gun, which is an example of projectile motion. Galileo undertook some work in this field, but it would be problematic to suggest that the atrocities of the Second World War were in some way attributable to Galileo. You can then look at the others who developed this further and produced the branch of physics that became known as projectiles. Using the same argument it would still be difficult to see someone taking direct ethical responsibility for some of the results of the Second World War. However, if you consider the situation of Jean-Baptiste Vaquette de Gribeauval, who invented artillery during the Napoleonic Wars, then that might produce a more varied response. In this case it can be argued that there is an intention to apply the scientific knowledge for questionable purposes and therefore he could be deemed responsible for the consequences. If you want to take this further, have a look at the idea of consequentialism within ethics.

In terms of the unethical behaviour of the scientist, many of the more famous examples are much more clearly agreed upon. In most cases the name of the scientist involved has been tarnished and in many cases their career as a research scientist has ended. For example, part of an article published in *Science* magazine in August 2017, entitled "University of Tokyo probe chromosome team doctored images", is reproduced below (Normile 2017).

> After a nearly year-long investigation into anonymous allegations of data and image falsification in numerous papers, a University of Tokyo committee today announced it had confirmed that one research group falsified images and graphs in five papers. The panel cleared five other research groups of wrongdoing.
>
> The panel's judgment "is very severe", says Yoshinori Watanabe, leader of a team that studies chromosome dynamics at the university's Institute of Molecular and Cellular Biosciences. He previously acknowledged having departed from best practice in handling images, but maintains that the problems the panel cited in his group's publications had no impact on the papers' conclusions.
>
> *(www.sciencemag.org/news/2017/08/university-tokyo-probe-says-chromosome-team-doctored-images)*

In this case the ethical consideration could again be investigated through consequences. However, the claim that falsifications do not change the conclusions is an interesting line of defence and, depending on what is believed, it will influence the form of the ethical conclusions drawn.

Links to TOK concepts and knowledge questions

The focus here is about who is responsible for knowledge and how far back in time that responsibility goes. The TOK concept under discussion is therefore responsibility. Here are some possible knowledge questions you could ask and try to answer.

- Ethics: To what extent can the natural sciences be considered to be "ethics-free"?
- Ethics: To what extent is it justifiable for the scientific community to be responsible for the "misuse" of knowledge from the natural sciences?
- Ethics: To what extent should we try to predict the usage of scientific knowledge in order to protect humanity?
- Ethics: Who decides where the lines are drawn in terms of defining ethical principles when applied to the natural sciences?

HUMAN SCIENCES

A natural progression from the natural sciences is into the human sciences. Subjects that fall within the human sciences include psychology, economics, anthropology, sociology and parts of geography. The human sciences look at the way in which humans behave through a scientific lens. If you think about what natural scientists do, which is to generalize, predict and explain the natural world, then you can immediately think of one of the challenges when this is applied to the human sciences: human behaviour is often unpredictable. In order for some form of scientific method to work in the human sciences the way in which experiments and studies are conducted is important. Unlike in the natural sciences where most methodology is quantitative (it can be physically measured), in the human sciences it can also be qualitative, where analysis is undertaken on people's experiences.

> "As to the relative importance of soft and hard science for humanity's future, there can be no comparison. It matters little whether we progress with understanding the Diophantine approximation. Our survival depends on whether we progress with understanding how people behave, why some societies become frustrated, whether their governments tend to become unstable and how political leaders make decisions like whether to press a red button."
>
> (Diamond 1987: 39)

This can sometimes lead to the argument that the human sciences are somehow "less useful" than the natural sciences because the data used is less certain, the generalizations potentially have more exceptions and the ability to predict is less extensive. Jared Diamond in his article "Soft sciences are often harder than hard sciences" disputes this argument. The quote on the left gives his conclusion about categorizing natural sciences as hard sciences and human sciences as soft sciences.

So, the human sciences open up a whole series of new issues for TOK discussion.

Stimulus 1: Representing the data

Very often the data you have to work with in the human sciences is qualitative—this often takes the form of people's opinions, viewpoints, stories or ideas. If these are in the form of words they can be quite difficult to compare. If you are going to generalize and predict, then comparison is essential. To make this comparison, sometimes data is coded (put in meaningful categories to compare) and sometimes it is quantified (given numerical values). This can often be seen in

questionnaires, where one way of working is to use a Likert scale. You use a Likert scale to decide and record where a response lies in a range from one extreme to another.

THINKING POINT

Online there are many surveys you can take. Many of them ask a series of qualitative questions but then give you a quantitative result. Look at one of those surveys and analyse two or three of the questions. Answering the following questions will help you with the analysis.

- What will be the problem(s) with trying to quantify the response to the question?
- What other answers might you want to give other than the possibilities provided?
- Do you think the results from the survey will be accurate? (Think about what accurate means in these circumstances.)

Discussion

You can consider this further using the following example. In a survey on international-mindedness you might be asked to respond to a statement such as the following.

In order to be internationally-minded it is necessary to be able to speak more than one language fluently.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
5	4	3	2	1

To analyse what a group of participants think of this statement the amount you agree or disagree has a number attached to it (as shown above) and it is possible to calculate an average score for a group of participants. This could be the most common value, the middle value or the mean. The result gained will depend on which sort of average is chosen. There are also other challenges. For example, the difference between Agree and Strongly agree is not the same for everyone; also, if there are outliers (a very small number of results at either extreme) then this can give the researcher a false representation. Another issue is to decide whether you allow participants to take a middle line—in this case Neutral. On some questionnaires this is not done. Whenever qualitative data is quantified there is a possible tension.

Links to TOK concepts and knowledge questions

The focus here is how quantitative and qualitative data each have their own challenges in terms of producing a result that reliably represents what has been found. Therefore, one of the TOK concepts under discussion is representation. Here are some possible knowledge questions you could ask and try to answer.

- Methods and tools: To what extent do representations of data influence the reliability of knowledge?
- Perspectives: How does the way in which data is represented influence the value of knowledge in the human sciences?
- Scope: Does it make sense to talk about laws when it comes to human behaviour?

- Perspectives: To what extent does it matter that there is a degree of uncertainty in most knowledge gained from the human science?

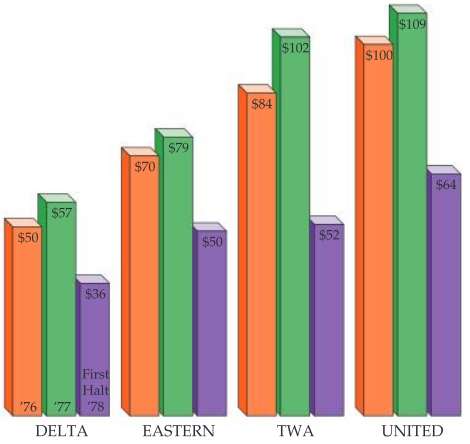
Stimulus 2: Analysing data

As you have seen in stimulus 1, producing the data creates some questions for TOK and this continues with the analysis of that data; one of the major points of discussion is around the use of statistical methods to provide justification for the data. Statistics are sometimes mistrusted within the human sciences as can be seen from the quote "lies, damn lies and statistics", which is attributed to a number of people including the author Mark Twain and the British Prime Minister Benjamin Disraeli. The reason for this mistrust is that in some cases the data can be manipulated by statistics or the statistics can be used in such a way as to suggest something that is not true.

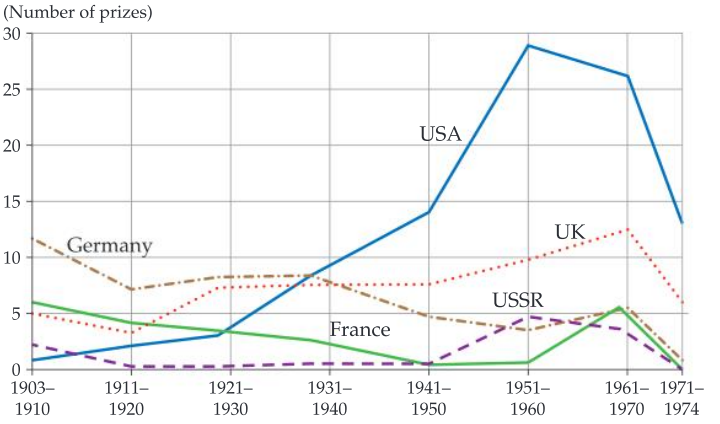
Why might each of these graphs be deceiving?

THINKING POINT

You will now consider this through the representation of data. Look at the three graphs from ER Tufte (1983), shown as Figures 2.7—2.9. Note the visual display of quantitative information.



▲ **Figure 2.7** Commission payments to travel agents, in millions of dollars



▲ **Figure 2.8** Nobel Prize awarded in science, for selected countries, 1901–1974

▲ **Figure 2.9** Comparative annual cost per capita for care of insane in Pittsburgh City homes and Pennsylvania State hospitals

Discussion

Figure 2.7

In this case if you look carefully you will see the bar representing 1978 is only for half the year whereas for 1976 and 1977 the commission is based on a whole year.

Figure 2.8

In this case the USA was relatively unaffected economically by the Second World War and so it is perfectly understandable that there was more money to spend on scientific research during and after the Second World War. Also, the USA is being compared to countries that all had massive economic hardship during this period of time.

Figure 2.9

In this case it is not clear what is being compared. Is it the height of the buildings or the area of the buildings that is being compared to expenditure? No matter which case it is, the representation is inaccurate. The difference between the Norristown and Warren buildings is very large, but it only represents $1.

In reality there is no problem with statistical diagrams, provided they are produced accurately—the problem comes when they are designed inaccurately (sometimes inadvertently, sometimes not) or they are applied to inappropriate situations. Properly done, statistical justification is seen as important and provides a degree of security to knowledge in the human sciences.

Links to TOK concepts and knowledge questions

The focus here is about how the display of information can be misleading, resulting in people believing more than they should or less than they should. Thus two of the TOK concepts under discussion are accuracy and believability. Here are some possible knowledge questions you could ask and try to answer.

- Methods and tools: How do we decide on whether the results from the human sciences can be believed?
- Scope: To what extent can we use present knowledge in the human sciences to predict future knowledge in the human sciences?
- Methods and tools: To what extent can the human sciences use mathematical techniques to make predictions more accurate?
- Perspectives: To what extent is the knowledge gained in the human sciences accurate?

Stimulus 3: Reliability and the human sciences

Reliability is always a concern for those who work in the human sciences. The first problem comes from the fact that when looking at human behaviour it is nearly always impossible to look at the whole population and therefore you are left to decide what makes a representative sample. Once you have decided on the sample, if you are going to meet with your participants then your relationship with those people will be important and will in part be determined by who you are—this will need to be factored into your results. Then there is the potential problem of what your participants decide to share with you. Some of them may choose to lie and others may have made

decisions on what it is that you want to know. Some will do their best to answer your questions directly. This has to considered and explained when you write up your results.

THINKING POINT

Imagine you are going to undertake a study of stress levels in IB Diploma Programme students in your school and that your main method will be to interview a number of students about their experiences. What would you need to be careful about when you come to set up the study, carry out the interviews and analyse the responses?

Discussion

The first problem you would face for your research would be the problem of getting a representative sample. You would need to decide what was representative, which would include decisions on ethnicity and gender. Next you would be faced with the challenge of finding enough people and for those people to agree to be interviewed.

Once you have overcome these challenges then the interviews themselves have challenges. If any participants decide they do not like you, then they may decide to be uncooperative (in extreme cases they may try to sabotage your research). Also, how the participants react to you may depend on your gender, ethnicity, age and past reputation.

Now consider the results themselves. A participant may have chosen to be "difficult" and may lie. The participant might think about what you are trying to find out and give a response that would back up the supposed result. The participant might answer truthfully, but the status of that truth may depend on the circumstances under which the participant experienced stress.

There are no simple answers to any of these problems but the researcher in the human sciences has to find answers. This is why in any research methods book or academic journal article there will be some form of discussion on reliability and validity of results.

The problems have to be dealt with methodologically. Techniques include:

- doing trial research to test your research instrument
- having others in the field review your research instrument
- the idea of triangulation or crystallization, where your results are compared to two or more other studies using different methodologies
- the idea that you effectively "declare your biases": as a researcher you let people know of things about your personally that may affect your viewpoint on something—for example, as a researcher in economics you might declare your political views and as a researcher in sociology you might declare your gender.

Links to TOK concepts and knowledge questions

The focus here is about how to overcome the challenges that occur through the research methods chosen. This is not an issue of the research methods themselves, but is a problem of trying to generalize and understand human behaviour. The main TOK concept under discussion is reliability. Here are some possible knowledge questions you could ask and try to answer.

- Methods and tools: To what extent can we ensure the reliability of knowledge in the human sciences?
- Methods and tools: How does the scientific method change when applied to the human sciences?
- Perspectives: Could it be argued that some of the human sciences are more scientific than others?
- Perspectives: What counts as reliable evidence within the human sciences?

Stimulus 4: Bias and the human sciences

Bias, where one position is favoured over another without justification, is a concept in TOK that is frequently discussed. The naïve perspective seems to be that the aim of the human sciences researcher is to be completely unbiased and if you do not obtain that goal then to some degree the research you do has failed. Within the world of the human sciences in any literal sense this position is unattainable. You could aim for the goal but you would never score.

> "I think unconscious bias is one of the hardest things to get at."
>
> (Ruth Bader Ginsburg, judge)

THINKING POINT

What might be the potential problems with bias in the following scenarios?

1. A researcher produces a questionnaire about views on ethnicity and every question contains the word "you".
2. A researcher produces a questionnaire about views on gender and all questions have exactly the same format.
3. A researcher undertakes a study on addiction to prescription drugs, but is required to state that the funding for the research comes from a drugs company.
4. A researcher who actively campaigns for the rights of gay men undertakes research on discrimination against gay men and conclusively finds that there is discrimination.
5. A researcher produces a questionnaire on shopping behaviour. The researcher asks the specific questions before the general questions and questions on similar products are grouped together.
6. In a questionnaire on behaviours of students in the playground the following question is asked. "At any time during break today, did any older student hit you?"

Discussion

Here are some thoughts on the different cases you have just considered.

1. By phrasing each question directly to participants, there is a danger that they may answer in a certain way as they could feel that judgments are being made about them personally. Asking a number of questions about third parties eliminates some of the personal pressure.
2. If all questions have the same format there is a danger that participants will stop reading them properly. They may also make the assumption that as all the questions have the same format, so must the answers.

3. If the company funding the research has a specific viewpoint on what it would want the results to show then there is a danger that participants will take this into account when answering and not answer truthfully.
4. This is probably one of the best known forms of bias, confirmation bias, where the researcher might be finding out what they already believe to be true.
5. The order of questions is important and if groups of questions are very similar, or specific cases are asked before general ideas on the same topic, there is a danger that the way participants will answer later questions is influenced by how they answered earlier ones.
6. This would be an example of a leading question where the way the question is asked leads participants to answer in a certain way. Asking the question "Did anything happen at break today?" is more likely to produce an unbiased response.

Producing successful research into human behaviour needs a lot of careful thought and even then it is not possible to eliminate bias completely. Dealing with bias needs a subtle approach and in fact bias can be split into two types—intentional and unintentional.

Intentional bias is the idea that you would deliberately present a viewpoint and deliberately suppress other viewpoints with the intention of achieving a specific result. This is clearly problematic, but is not always as easy to spot as it might first appear. Although the bias may be intentional that does not mean it is declared; often part of the intention is to try to hide the intention.

Unintentional bias is a very different concept. All knowledge you have about the world is interpreted and filtered through your brain, so it is influenced by aspects of your character, your personality and your past experiences. In fact, unintentional bias can be an advantage especially if you have face-to-face contact with your participants. This happens when they find characteristics in common with you and feel that you are or can be empathetic to their points of view.

Links to TOK concepts and knowledge questions

The focus here is working with bias and remembering that bias is not always problematic—in some cases it can be an advantage. The TOK concept under discussion is bias. Here are some possible knowledge questions you could ask and try to answer.

- Methods and tools: How do we overcome bias when producing knowledge in the human sciences?
- Perspectives: What is the positive contribution made by bias when producing knowledge in the human sciences?
- Methods and tools: To what extent should we care about bias when producing knowledge in the human sciences?
- Perspectives: How important is it that the knowledge we gain from the human sciences represents the truth?

HISTORY

On a very basic level history is about events in the past. However, even that simple statement shows some of the challenges that are faced. The first question is: what do you want to know about these events? If it is about what happened and when it happened, and if this is a relatively recent event, then finding that out should not be too difficult. Obviously for much older events there are additional challenges, but it can also be challenging for modern-day events as there may be people or institutions who prefer the information remains secret—most governments have ways of making certain information inaccessible for a period of time if they feel it will be harmful. Historians also have views on the question of how old something needs to be for it to be considered history. For the IB it is 10 years but for some historians it is longer.

This is only a small amount of what historians do, as the main part of their work is to piece together the evidence (the what and the when) to explain the how and the why. The evidence comes in the form of sources and without evidence it is difficult for historians to make a case. Historians also need to know about other interpretations of the same evidence and where a particular position fits. This leads to the idea that there will be multiple histories of an event or period of time—which links into what are called different schools of history (you might be familiar with terms such as orthodox, revisionist, post-revisionist) and also the idea of historiography. As in the human sciences, the personal background of the historian may also play a role.

Stimulus 1: Whose history?

There are always viewpoints in history, but sometime those viewpoints take an approach that definitely presents it from the perspective of a specific group of people, or misses out a group of people. This can be seen from the quote on the right.

Quotes about who writes history abound with variations on the idea of history being written by the winners or victors. The extent to which this is true may be a point for further interesting discussion, but for TOK you are now going to explore this further.

> “History is always written by the winners. When two cultures clash, the loser is obliterated, and the winner writes the history books—books which glorify their own cause and disparage the conquered foe. As Napoleon once said, ‘What is history, but a fable agreed upon?’
>
> (Brown 2003)”

THINKING POINT

Take an event from more than 40 years ago and research the contribution made by one of the following:

- a woman
- a gay man
- a black man.

Discussion

It is not that any of these people are wholly invisible from history books, but their contribution may be diminished or the fact of them being black, gay or a woman may have been diminished. In the recent past there have been attempts to address this through events such as "Black History Month", "LGBT History Month" and "Women's History Month" where the idea is to celebrate people who made significant contributions to historical events. It is not necessarily that the colour of their skin, their sexual orientation or their sex were important in what they did or the event that took place, but the fact that they are noteworthy in a historical account and that they were black, gay or a woman is important as it makes the case that these people are not and should not be invisible in society.

Here are three examples.

▲ **Figure 2.10** Rosalind Franklin—scientist

In 1962 James Watson, Francis Crick and Maurice Wilkins won the Nobel Prize for their discovery of the molecular structure of DNA. At that time no mention was made of Rosalind Franklin, a researcher who worked with Maurice Wilkins, who it transpired had taken a key photograph that helped to unravel the mystery of DNA. Rosalind Franklin was a brilliant physical chemist who had initially worked in Cambridge and then Paris and had become highly adept at working with the methods of x-ray crystallography. Her research focus at this point had been on structures of coal and plant viruses, which are challenging structures to photograph. When she moved to King's College London in 1951 as a research associate, she was assigned to work with Maurice Wilkins in the biophysics unit where the focus of the work was on DNA, which is also challenging to photograph. DNA has two forms, A and B, and it was an x-ray photograph of the B form taken by Rosalind Franklin, labelled 51, that provided James Watson and Francis Crick with the essential evidence they needed to back up the double-helix structure they had proposed.

▲ **Figure 2.11** Alan Turing—mathematician

"Alan Turing was a brilliant British mathematician who took a leading role in breaking Nazi ciphers during World War II … In 1936 Turing delivered a research paper "On Computable Numbers, with an Application to the Entscheidungsproblem", in which he presented the notion of a universal machine (later called the universal Turing machine, then the Turing machine) capable of computing anything that is computable: it is considered the precursor to the modern computer. Over the next two years, Turing studied mathematics and cryptology at the Institute for Advanced Study in Princeton, New Jersey. After receiving his PhD from Princeton University in 1938, he returned to Cambridge, and then took a part-time position with the Government Code and Cypher School, a British code-breaking organization. During World War II, Turing was a leading participant in wartime code-breaking, particularly that of German ciphers. He worked at Bletchley Park, the GCCS wartime station,

where he made five major advances in the field of cryptanalysis … He also wrote two papers about mathematical approaches to code-breaking, which became such important assets to the GCCS (later known as the Government Communications Headquarters or GCHQ) that the GCHQ waited until April 2012 to release them to the National Archives of the United Kingdom". (biography.com)

In his private life Turing identified as gay. Homosexuality was illegal in the UK in the 1950s and after an incident investigated by the police he was charged and found guilty of gross indecency. This ultimately led to his suicide. In 2009 the UK government officially apologized for prosecuting Turing for being gay and in 2013 Queen Elizabeth II of Great Britain granted him an official royal pardon.

"Thurgood Marshall—perhaps best known as the first African-American Supreme Court justice—played an instrumental role in promoting racial equality during the Civil Rights movement. As a practicing attorney, Marshall argued a record-breaking 32 cases before the Supreme Court, winning 29 of them … Marshall represented and won more cases before the high court than any other person. During his 24-year term as Supreme Court justice, Marshall's passionate support for individual and civil rights guided his policies and decisions. Most historians regard him as an influential figure in shaping social policies and upholding laws to protect minorities." (www.history.com)

▲ **Figure 2.12** Thurgood Marshall—Associate Justice of the Supreme Court of the United States: 1967–1991

Links to TOK concepts and knowledge questions

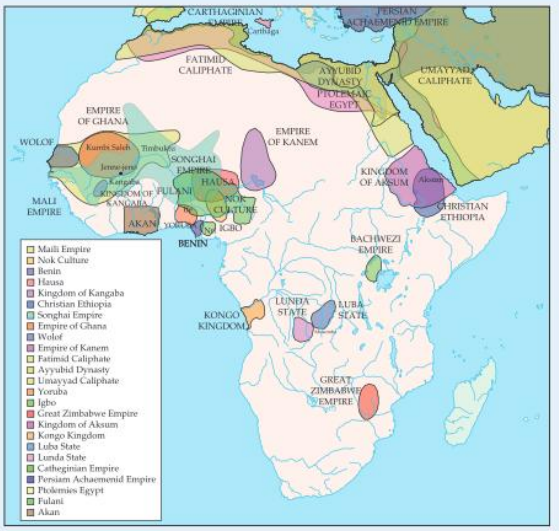
This stimulus is looking at the contribution to history of people from a diversity of backgrounds and arguing that they should be visible. It also raises awareness to the question: what is the history of women, gay men or black men in the fields of study in which they worked? In this case the TOK concept under discussion is perspective. Here are some possible knowledge questions you could ask and try to answer.

- Perspectives: How important are the characteristics of people in history to the interpretation of history?
- Perspectives: Why is it important that history is seen through different lenses?
- Ethics: To what extent could it be argued that history needs to be rewritten to incorporate different voices?
- Perspectives: Can the history of any group who have been oppressed be written by those who hold power?

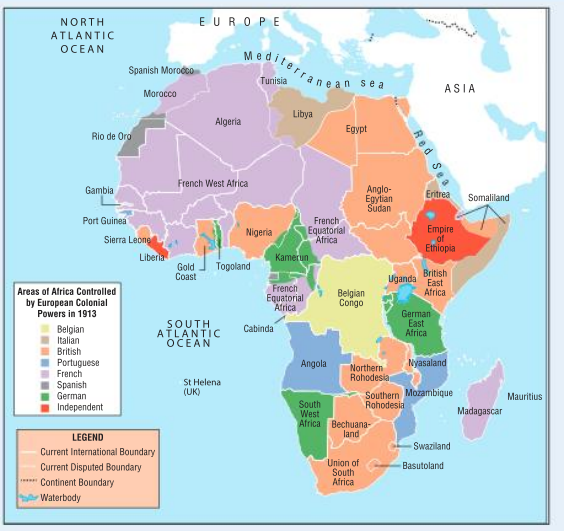
Stimulus 2: Viewpoints on history

History is about understanding events in the past and asks about the how and the why. It is not just about presenting the facts that are known, it is about the interpretation of those facts. Most major events in history have been given this historical treatment, but it does raise some interesting questions about the idea of truth in history.

THINKING POINT



▲ **Figure 2.13** Map of pre-colonial cultures of Africa prior to 1500



▲ **Figure 2.14** Areas of Africa controlled by European colonial powers in 1913

Until the mid-19th century most countries in Africa were still led by African rulers, despite the fact that there had been coastal trade for centuries and exploration into the interior of the continent. As you can see from Figure 2.14 , by the early 20th century this had all changed and much of the continent was under colonial rule. This became known as the Scramble for Africa and one of the questions that historians ask is: why did this happen? There are three main arguments. Some historians focus on what could be called ideological beliefs based on the idea that the European race and civilization were superior. Others focus on the idea of political ambition. Once a country conquered a territory in Africa, other countries felt they had to keep up with this for fear of losing power and prestige. The third set of reasons were economic. This was the time of the Industrial Revolution in Europe and countries were looking for new sources of raw materials and new markets for their products. Do some brief research to find out more about each of these viewpoints.

Discussion

Here is a brief summary of the situation.

"Some historians focus on ideological motivations in the late 19th century, that Europeans and Americans increasingly believed that they were destined to extend their culture abroad. These historians look for evidence of an upswing in European and American chatter about how their race and civilization was superior. For example, Josiah Strong, an American Congregationalist minister, explained in 1885 why he believed that the Anglo-Saxon race was destined to rule the world.

Historians also point to political competition between increasingly powerful European countries as a key underlying cause for the Scramble for Africa. Once one nation conquered a territory abroad, others felt compelled to respond or they would lose power and prestige. Although political rivalries were an important factor in causing the Scramble, these same European countries had competed for centuries to tip the balance of power in Europe. So, what was different this time?

The short answer is industrialization. As industrialization spread and matured in the 19th century throughout western and central Europe, it gave countries the wealth, technology, and motivation to look beyond their homelands. Nations competed with each other for access to raw materials, markets, and cheap labor. As European industrial production increased and spread, raw materials became harder to come by. A sure way to control raw materials and markets would be to create colonial monopolies … .

As industries in Europe competed, they searched for the cheapest and easiest access to raw materials. … Lieutenant Cameron, the British explorer, wrote a letter to the Royal Geographic Society, after a three year journey across Africa in 1876, capturing the sense that raw materials might abound in the continent: 'The interior is mostly a magnificent and healthy country of unspeakable richness …' … .

Industrialization and modern science also gave European imperial powers the means to carry out a conquest. … It seems no coincidence that the Scramble for Africa occurred around the time of industrial innovations such as steam ships, telegraphs, railroads, and, most importantly, new weapons. Breach loading rifles and the Maxim gun were game changers. The Zulu defeated British soldiers in battle in 1879. But, the Maxim gun insured that would never happen again … . By the end of the 19th century, military resistance to European conquest was futile."

(http://webs.bcp.org/sites/vcleary/ModernWorldHistoryTextbook/Imperialism/section_6/causesmotivations.html)

Links to TOK concepts and knowledge questions

This stimulus is raising questions about the nature of historical knowledge, the idea of viewpoints and the relative weighting of those viewpoints. It is not as simple as saying one is true and the others false, but instead looking at the way in which they fit together. This is often not agreed upon by historians. There are a number of TOK concepts that could be under discussion here, including truth, justification, evidence and certainty. Here are some possible knowledge questions you could ask and try to answer.

- Perspectives: To what extent is historical knowledge simply a matter of viewpoint?
- Methods and tools: How does the weighting of evidence influence what becomes historical knowledge?
- Ethics: Do all viewpoints have equal merit when considering historical knowledge?
- Scope: To what extent can historians reach agreement on what counts as historical knowledge?

Stimulus 3: History or current affairs?

History is dependent on the availability of evidence in the form of sources. In one sense this makes increasing our historical knowledge of people and events from many centuries ago very difficult. It becomes even more difficult if there was little written evidence in the first place. In one sense you could conclude from this that undertaking a historical analysis of a current event would be much easier but, interestingly, this is not necessarily the case. Very modern events come with a set of challenges of their own.

THINKING POINT

Take an event that took place between 15 and 30 years ago. For that event find out:

- who was involved
- why the event took place
- when it took place
- why it is worth documenting for history
- what took place and why it happened the way it did
- what effect it has had.

Now consider how sure you are that your interpretation of the event is correct.

Discussion

Here we will look briefly at the 2013 legal amendment to the 1955 marriage bill in New Zealand. This change allowed same-sex marriages to take place. New Zealand was the first country in the Asia Pacific region to make this change. The amendment became law in New Zealand on 19 April 2013. These details are known from government records, from press recordings at the time and from documents advising on aspects of equality for those in the gay community. The law was enacted when the first same-sex marriage took place in August 2013. This allowed two men or two women to enter into a marriage. This can be seen from the number of people who have been involved in such partnerships and the fact that these partnerships are registered by the state. It was the result of discussions on the rights of gay men and women to be equal to those of an opposite-sex couple. Again, documentation from the time shows this was true and there are multiple sources that show the same thing. It changed the way in which gay couples were seen and increased acceptance of those who identify as gay. It was also one of the events that changed how the concept of family is interpreted. This is where the historical account becomes more subjective. Although the last two statements are true at present, they have only been true for a small number of years and whether opinions will stay the same or strengthen in either direction is not known. As the interpretation is only based on a short time period, it is certainly more open to change. Thus writing a history of this becomes a challenge as changes continue to be made, the long-term interpretations are not known and how it will affect or change wider culture is again not fully known. Research indicates there is more acceptance of the gay community, but again it is not possible from a historical point of view to suggest that all changes affected by this have taken place. Also, many of the people involved in the event itself and who were the beneficiaries of the law change are still alive today, so first-hand accounts are still easy to find. However, this can make gaining a balanced perspective on how this change was perceived more difficult to judge.

In terms of history in general, once people associated with the event are no longer alive, sometimes pieces of information that might have been seen as problematic at the time are released. If it was a polarizing person from a certain time, then sometimes this can change how they are viewed. Sometimes when people die, pieces of information that were withheld become available. Therefore, the history of current events also

comes with a set of challenges. There are debates among historians about how many years need to pass after an event before it can be considered as part of history and historical analysis can be undertaken—that is, it can be seen as being open to historical interpretation and there is a wide a range of information available. As noted earlier, for the IB the period is 10 years, but for other institutions and historians it is longer.

Links to TOK concepts and knowledge questions

This stimulus is raising questions about how history works and how successfully the methodology of history can work on current events. It also raises a set of questions around objectivity and this is one of the TOK concepts that could be under discussion. Here are some possible knowledge questions you could ask and try to answer.

- Methods and tools: How old does an event have to be to be considered part of history?
- Scope: To what extent is objectivity possible when undertaking a historical analysis of an event that has taken place in the last 30 years?
- Perspectives: To what extent is historical analysis dependent on the time it was written as opposed to the time of the event?
- Ethics: Do all points of view need to have equal weighting when creating a piece of history?

Stimulus 4: Primary sources

THINKING POINT

Here are six primary sources that relate to the Vietnam War.

Source 1

▲ **Figure 2.15** An M41 Tank as used on active service as part of the Vietnam War

Source 2

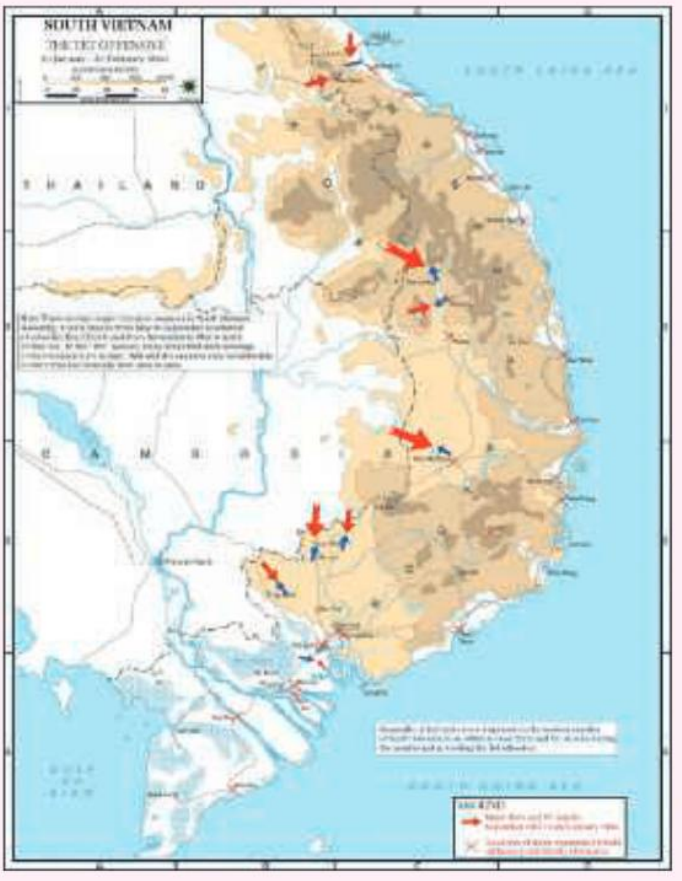


Figure 2.16 Map of the Tet Offensive which was one of the events that caused a major escalation in the war

Source 3

The same war continues.

We have breathed the grits of it in, all our lives,
our lungs are pocked with it,
the mucous membrane of our dreams
coated with it, the imagination
filmed over with the gray filth of it:

the knowledge that humankind,

delicate Man, whose flesh
responds to a caress, whose eyes
are flowers that perceive the stars,

whose music excels the music of birds,
whose laughter matches the laughter of dogs,
whose understanding manifests designs
fairer than the spider's most intricate web,

still turns without surprise, with mere regret
to the scheduled breaking open of breasts whose milk
runs out over the entrails of still-alive babies,

Extract from the poem "Life at War" by Denise Levertov (1966)

Source 4

◀ **Figure 2.17** An anti-conscription poster protesting against conscripting Australian men to fight the Vietnam War on the side of the Americans

Source 5

◀ **Figure 2.18** A Sky Trooper from the 1st Cavalry Division (Airmobile) keeping track of the time he has left on his "short time" helmet, while participating in Operation Pershing during the Vietnam War.

Source 6

Diary entry, 16 August 1968

We just finished eating some hot food that was brought to us, we don't get many days like that. Most of the times we eat out of cans or packaged food from army poaches. We are in the mansoon season whent it rains for three months continuessly and even if they supply us with dry clothes, within the half day we will be soaking wet again. … The letters are wishing me many happy birthday wishes and I guess I'll lite up this one candle that was sent to me and have my friends here celebrate even if it's fourteen days late. I haven't had a day off after so many combat missions so now is as good as any. … Besides, they just spotted some enemy not too far ahead and they are asking for a volunteer group to form a killer team and go seek the enemy and engage. They are too close to our area and we don't want them hitting our camp area. I didn't ask for it, but when some of my buddies did, I couldn't say no to them. We are like one big family that depends on each other for support. …

The helicopters are here and we have to load them so that they can drop us off further up north so the enemy will not get a clear view as to where we are at right now. They will watch the helicopters arriving and letting us off while they lay in a low profile to get a fix on us and ambush us later. It's a game, we know they are there, they know we are coming, it's just a matter of who ambuses who. … My legs on hanging out from the opening of the helicopter as it vibrates up in the air in the skies. Boy, it's a lovely sight to see if you like trees and such. I do, and I find beauty even in this hostile enviroment. The hills and the mountain side from here looks like something I have seen in pictures in magazines, but I don't forget that it is full of hiding places for the Viet-Cong.… I will be the first one to get off the helicopter and I must quickly set myself down and ready to fire my weapon. I must project the ones that will unload after me. I must provide a fire cover if someone begins to shoot at us. I need to put my diary away, make the sign of the cross, say a little prayer and be ready for action. I'll write later if nothing happens to me.

(https://vietnam-war-analysis.weebly.com/text-no-2-diary-entry.html)

Source 6 is a diary entry from an American citizen named Oscar Elizondo. He fought in the Vietnam War while he was very young and went back to his country to work as a teacher. Oscar posted his diary entry online, with the title "August 16, 1968, Wounded on my birthday", to share memories with fellow soldiers. This is one of many diary entries he posted along with stories he wrote for children.

Now write a short piece explaining what life would be like for an American soldier fighting in the Vietnam War. Explain how your primary sources would back up what you say.

Discussion

There are a number of different ways this activity could have been completed. You could have:

- read each source and decided what information was given
- read all the sources and created an overall picture
- read all the sources and decided what provided the most evidence
- used other work you know as a basis or to provide further evidence.

Below are some thoughts on what you could learn from each source.

Source 1

Tank warfare takes place when there is close combat between both sides. You learn that tank warfare was involved in the Vietnam War. It was part of a range of weapons used and would have been supported by airborne troops including helicopters. The inside space of a tank is small with enough space for four crew. Also the climate in Vietnam is tropical or subtropical, so it would have been warm inside a tank. Those inside would have been witness to what was happening on the ground.

Source 2

This is a map illustrating an operation in the Vietnam War called the Tet Offensive, which began in January 1968. In this operation the North Vietnamese launched a series of coordinated attacks on more than 100 cities and outposts in South Vietnam. They were trying to encourage the USA to reduce its involvement in the war by causing rebellion among the South Vietnamese. American and South Vietnamese forces managed to hold off the offensive, but in the USA the public

were shocked by news reports of the attacks, and support for the war weakened.

The Tet Offensive can be seen as a strategic victory for the North Vietnamese and a turning point in the war. The attacks prompted the slow and painful withdrawal of US forces from the region.

Source 3

It is clear this is a piece of anti-war poetry. The section shown begins with the description of war complete with the imagery of disease and ill-health and suggests that "the imagination filmed over with the gray filth of it". It then continues with descriptions of humans from a highly positive, almost idealistic, point of view with the frequent references to the positives of nature. The poet then focuses on humans in war and how easily the atrocities of war impact the same human beings. It is important to remember that this was a war that was very visible to those taking part—both sides were in close proximity to terrible sights. Also, this was the first war that took place to some degree in front of the media.

Source 4

This is what the Australian Government's Department of Veteran Affairs has to say about the Vietnam War.

"The Vietnam War was the longest twentieth century conflict in which Australians participated; it involved some 60,000 personnel and grew from a limited initial commitment of 30 military advisers in 1962 to include a battalion in 1965 and finally, in 1966, a task force. Each of the three services was involved, but the dominant role was played by the Army. After the cessation of combat operations in 1972, a limited number of Australian personnel remained in Vietnam, and elements of the RAAF returned in 1975, carrying out evacuations and assisting refugees almost until the moment of South Vietnam's surrender.

In the early years Australia's participation in the war was not widely opposed. But as the commitment grew, as conscripts began to make up a large percentage of those being deployed and killed, and as the public increasingly came to believe that the war was being lost, opposition grew until, in the early 1970s, more than 200,000 people marched in the streets of Australia's major cities in protest."

(https://anzacportal.dva.gov.au)

Source 5

This is a photograph of a soldier where the focus is on the dates written on his helmet counting down the time he has left in Vietnam. This suggests there was a focus on this for troops who went to Vietnam. As the photograph was taken during Operation Pershing, the date of the photograph is from 1967 or early 1968. In terms of the war, Operation Pershing was seen as an American success. However, this was a time when American men were being drafted into the military (it was not a volunteer army) and many were in Vietnam because they had to be. By 1968 opposition to the war by Americans back home in the USA was growing but not yet at its height.

Source 6

This is a diary entry that provides a very clear understanding of what the writer was feeling at the time. The sense of responsibility to

other soldiers comes across in the writing, as do descriptions of the actions taken by that soldier. Diary entries are often most effective as historical sources when used in conjunction with other more official sources.

Links to TOK concepts and knowledge questions

This stimulus is raising questions about the role, range and effectiveness of sources, which are very much at the centre of what historians use. Discussions would be centred around the TOK concepts of interpretation and reliability. Here are some possible knowledge questions you could ask and try to answer.

- Methods and tools: How do historians use sources to produce historical knowledge?
- Scope: How do we determine the value of a specific source?
- Perspectives: To what extent does a range of sources lead to a range of historical interpretations?
- Methods and tools: How do we evaluate the reliability of a historical conclusion?

THE ARTS

The arts is an area of knowledge that covers a wide number of disciplines. These include music, visual arts, theatre, film, literature and dance. However, what is included within the arts is partly dependent on the definition used. A number of different viewpoints are often mentioned in the arts in relation to knowledge. These include the idea of some form of skill being developed and needed, the idea of the artwork raising an emotional viewpoint (both positive and negative and from the position of the artist and the viewer) and the idea of beauty. This then raises conversations about cookery and hairdressing being part of the arts, for example, along with areas of knowledge such as mathematics.

The arts are closely aligned to culture as they potentially make comment on a culture, represent a culture and provide teaching about a culture. It is also important to remember there are two different perspectives on art—the perspective of the artist and the perspective of the viewer. Finally, the reasons for producing a work of art are important—you will need to think about whether the work of art is produced for commercial reasons, aesthetic reasons, emotional reasons or is simply an exercise in demonstrating technique.

Stimulus 1: How do we make judgments about the visual arts?

Making judgments about the visual arts is neither easy nor is it agreed upon. To help with this, here are a few questions you might ask.

- How successfully does the artist portray a message?
- How do you react to the work?

- How skilful is the work of art with regard to technique?
- How unique is the work of art?

You will now try to work with these for yourself.

THINKING POINT

This activity involves two paintings and is in three parts.

Part 1

▲ **Figure 2.19** *Christina's World* by Andrew Wyeth

▲ **Figure 2.20** *Lucy in the Field with Flowers*, artist unknown

Using one, some or all of the questions above, make a decision on whether Figure 2.19 or Figure 2.20 could be called the "better" piece of art.

Part 2

You are now told the following.

Figure 2.19 is *Christina's World* by Andrew Wyeth and has the following description.

> "Set in the stark landscape of coastal Maine, *Christina's World* depicts a young woman seen from behind, wearing a pink dress and lying in a grassy field. Although she appears to be in a position of repose, her torso, propped on her arms, is strangely alert; her silhouette is tense, almost frozen, giving the impression that she is fixed to the ground. She stares at a distant farmhouse and a group of outbuildings, ancient and grayed in harmony with the dry grass and overcast sky."

Figure 2.20 is *Lucy in the Field with Flowers* by an unknown artist and has the following description.

> "The motion, the chair, the sway of her breast, the subtle hues of the sky, the expression on her face—every detail combines to create this transcendent and compelling portrait [every detail cries out 'masterpiece']."

Does this change your opinions about the works of art?

Part 3

You are now told these details.

Figure 2.19 appears in, and its description is taken from, the Museum of Modern Art, New York.

Figure 2.20 appears in, and its description is taken from, the Museum of Bad Art.

To what extent does this information change your opinion?

Discussion

Once you gain all the information, in part the decision has been made for you; one painting is owned and displayed by the Museum of Modern Art in New York and the other was the founding work for the Museum of Bad Art, which is now housed in Somerville, Massachusetts. However, if you did not know anything about either of the paintings, then the questions become more relevant. In one sense answering questions about a work of art unless you know about their context and their provenance (their record of ownership) can be very challenging. In this case, some of the motivation behind the painting *Christine's World* is known, but no information is available about *Lucy in the Field with Flowers*. Reactions can be both positive and negative—many pieces of art that shock or make us unhappy can still be seen as successful pieces of art. Technique is interesting in the sense that these two paintings have applied very different techniques, making comparison challenging; certainly *Christina's World* is more harmonious and the brushwork is much finer, but ultimately does that make it a better work of art? You could certainly argue that they are both unique but in rather different ways.

Links to TOK concepts and knowledge questions

This stimulus is raising questions about what gives works of art such as paintings value, who decides on that value and on what basis those judgments are made. A number of TOK concepts could be under discussion, including value and judgment. Here are some possible knowledge questions you could ask and try to answer.

- Scope: How does a work of art produce knowledge and what is the nature of that knowledge?
- Methods and tools: To what extent is it possible to have a set of criteria that allows us to make judgments on works of art?
- Ethics: Do all viewpoints have equal merit when considering artistic knowledge?
- Scope: Who decides on the value of a work of art?

Stimulus 2: Who created it?

Here consideration will be given to works of art that are forged—but look so convincing that even experts do not always know they are forgeries.

THINKING POINT

Figure 2.21 shows two versions of Vincent van Gogh's self-portrait. The original on the left was painted by Van Gogh is 1889 whereas the one on the right was a forgery painted in the early 20th century. These were used as part of the evidence at the trial in Berlin of Otto Wacker who was accused and convicted of selling forged pieces of art. As part of the trial the paintings were sent to two experts on the works of van Gogh and they could not agree on which of the paintings was genuine, if indeed either was. In the end it was science that produced a definitive answer when it was discovered that in the right-hand painting there was a pigment in the paint that van Gogh did not use; also, a resin had been added to the paints, which was something that van Gogh did not do.

▲ **Figure 2.21** Vincent van Gogh

Think about the idea of knowledge we gain from the arts. Now consider and reflect on the following question. If the work of art is a forgery, to what extent does this devalue the knowledge we gain from the work of art?

Discussion

Below is the view of Arthur Koestler from his book *The Act of Creation* (1964) which looks at the global theory of creativity and suggests that forgery does not devalue knowledge.

In 1948 a German art restorer named Dietrich Fey engaged in reconstruction work on Lübeck's ancient Markenkirche stated that his workmen had discovered traces of Gothic wall paintings dating back to the thirteenth century, under a coating of chalk on the church walls. The restoration of the paintings was entrusted to Fey's assistant, Lothar Malskat, who finished the job two years later. In 1951 Chancellor Adenauer presided over the ceremonies marking the completion of the restoration work in the presence of art experts from all parts of Europe. Their unanimous opinion, voiced by Chancellor Adenauer, was that the twenty-one thirteenth-century Gothic saints on the church walls were "a valuable treasure and a fabulous discovery of lost masterpieces."

None of the experts on that or any later occasion expressed doubt as to the authenticity of the frescoes. It was Herr Malskat himself who, two years later, disclosed the fraud. He presented himself on his own initiative at Lübeck police headquarters, where he stated that the frescoes were entirely his own work, undertaken by order of his boss, Herr Fey, and he asked to be tried for forgery.

…

My point is not the fallibility of the experts. Herr Malskat's exploit is merely one of a number of similarly successful hoaxes and forgeries—of which the most fabulous was probably Van Meegeren's faked Vermeers. The disturbing question that arises is whether the Lübeck saints are less beautiful, and have ceased to be "a valuable treasure of masterpieces," simply because they

had been painted by Herr Malskat and not by somebody else. And furthermore, if Van Meegeren can paint Vermeers as good as those of Vermeer himself why should they be taken off the walls of the Dutch and other national galleries? If even the experts were unable to detect the difference, then surely the false Vermeers could provide as much aesthetic pleasure for the common run of museum visitors as the authentic ones? All the curators would have to do is change the name on the catalogue from Vermeer to Van Meegeren.

(Koestler 1964)

Links to TOK concepts and knowledge questions

This stimulus is initially raising questions about the work of art itself and the name of the artist attributed to a work. The problem is the direct opposite to that of plagiarism, where you are suggesting that somebody else's work is your own. In this case it is the intention to pass off your own work as someone else's, potentially to make money. Although there are certainly ethical debates to this, to be a successful forger of a famous artist involves a skill and knowledge level of its own, linked to creativity. Hence this is focused around the concepts of ethics and creativity. Here are some possible knowledge questions you could ask and try to answer.

- Perspectives: To what extent does the artistic knowledge gained by the viewer depend on the name of the creator?
- Perspectives: To what extent is a judgment on creativity linked to originality?
- Ethics: Can the judgment of personal artistic skills be influenced by ethics?
- Perspectives: If the artist is considered unethical, can the knowledge gained from the work of art be described as ethical?

Stimulus 3: The development of art

Music, visual art and literature have all developed over a long period of time. During this time there have been many genres of each of these art forms. You will now think about the reasons for this in a little more detail.

THINKING POINT

Figures 2.22–2.24 are timelines showing an interpretation of how music, visual art and literature have developed and changed. These are not meant to be precise representations as time periods are fluid and some of the categories are headings for a number of subsets. From work you have studied in school or by undertaking a little research, consider how many entries on the timelines followed on from what went before, how many were a reaction against what went before and how many were a reaction due to cultural change. You should focus on one of music, visual art or literature and on four or five categories.

Music

Date	Event
1600–1750	Baroque
1750–1830	Classical
1830–1900	Romantic
1900	Opera
1903	Blues
1910	Jazz
1920	Country
1923	Folk
1930	Big Band
1940	R&B
1950	Rock
1970	Rap
1974	Punk

▲ **Figure 2.22** Timeline of key dates—music

Literature

Date	Event
1660–1798	Neo-classicism
1765–1830	Revolutionary
1798–1832	Romanticism
1832–1901	Victorian
1865–1914	Realism
1900–1930	Stream of consciousness
1900–1940	Modernism
1916–1924	Dadaism
1918–1929	The Lost Generation
1950–1970	Beat
1965–2000	Post-modernism

▲ **Figure 2.24** Timeline of key dates—literature

Visual art

Date	Event
500– 1400	Medieval art
1400–1600	Renaissance art
1527–1580	Mannerism
1600–1750	Baroque
1699–1780	Rococo
1750–1850	Neo-classicism
1780–1850	Romanticism
1848–1900	Realism
1865–1885	Impressionism
1885–1910	Post-impressionism
1890–1910	Art nouveau
1900–1935	Fauvism
1905–1920	Expressionism
1907–1950	Cubism
1917–1950	Surrealism
1940–1959	Abstract expressionism
1950–1969	Op art
1950–1969	Pop art
1960–1979	Minimalism

▲ **Figure 2.23** Timeline of key dates—visual art

Discussion

Let's take visual art as an example.

Impressionism focuses on capturing the light on canvas. It was a move away from painting history, mythology and the lives of great men. Artists painted "simply what they saw, thought, and felt" (www.theartstory.org). They focused on light, group dynamics and café culture, openness to sex, contemporary entertainment and scenes of domestic intimacy. Impressionists mostly painted outside. They shifted

away from painting the perfect copy of someone but tried to create an "impression" of how their subject, landscape, thing or person looked or made them feel in the exact moment they were painted.

Dadaism is a style of art that was headed by Marcel Duchamp, Hugo Ball and Salvador Dalí.

> Dada artists were known for their use of everyday objects that could be bought and presented as art with little manipulation by the artist. This use of the ready-made forced questions about artistic creativity and the very definition of art and its purpose in society.
>
> *(www.theartstory.org)*

Nearly all artwork from this style was created to protest in one way or another. Dadaism came into being as a response to the horrors of the First World War and the nationalistic attitudes that are thought to have ushered in the war.

Surrealism came after the Dada movement, and was founded by André Breton, who created surrealism to erase the line between dream and reality. This style mainly focused on creating imagery that was not possible in reality, featuring many obscure objects and landscapes that could only be found within one's imagination. Some hugely influential artists in this movement were Salvador Dali and René Magritte.

Post impressionism was essentially a minor revolt against impressionism. It has many stylistic variations:

> [ranging] from the scientifically [focused] Neo-impressionism of Georges Seurat to the … Symbolism of Paul Gauguin, but all concentrated on the subjective vision of the artist.
>
> *(www.theartstory.org)*

The movement was the start of an era that broke with tradition and allowed artists to have different stylistic approaches and to express themselves.

Links to TOK concepts and knowledge questions

This stimulus is raising questions about the nature and purpose of art and the links this has with aspects of culture, including time period, country, physical events and reactions against what went before. In TOK terms this is focused around the concept of culture. Here are some possible knowledge questions you could ask and try to answer.

- Perspectives: To what extent does knowledge from the arts depend on time period?
- Perspectives: How do physical events influence the messages sent and received by the creators and receivers of the work of art?
- Scope: To what extent is art a representation of the culture in which it was created?
- Perspectives: To what extent can the motivation for art be linked to protest?

Stimulus 4: What comes under the umbrella of art?

One of the questions that is often asked is: what counts as art? Certainly arguments have been made that "everything is art", but this does not really help. In this activity you will take your thinking on this further.

THINKING POINT

From what you understand to be the qualities of art, make a case for one of the following being an art:

- cookery
- fashion
- mathematics
- history.

Discussion

This section will focus on the reasons why cookery might be considered an art.

- Cookery engages all the senses—the presentation is as important as the taste, aroma and texture.
- One aspect of cookery is being creative in the kitchen.
- Another aspect of cookery is about wanting to acquire craftsmanship.
- Cooking is conceptual art.
- Cookery is about creating beautiful and harmonious pieces of work.
- It takes technical skill to balance textures and flavours.
- Cookery is about solving problems in a creative way.
- Visual art can be unique or can be "produced to a formula" and the same is true of cookery.
- Aesthetics are important when it comes to cookery.
- Just as visual artists consider colour combinations, so do some chefs.
- Balance, colour and pattern all play a role in cooking.
- Warm and cool plates can refer to the mix of colour rather than the temperature.

Links to TOK concepts and knowledge questions

This stimulus is raising questions about the qualities and skills necessary to produce works of art and part of this is having knowledge of the arts. The ideas noted above demonstrate some of the arguments for cookery being an art, but there are also reasons why it does not fully fit as one of the arts—the idea of longevity is an interesting one to consider. Therefore, this stimulus is focused around the concepts of qualities and creativity. Here are some possible knowledge questions you could ask and try to answer.

- Scope: Are there limits to how we define creativity?
- Perspectives: What role does sense perception play in understanding different forms of art?

- Methods and tools: What qualities make a subject an art form?
- Perspectives: To what extent is originality a condition for successful art?

SUMMARY

- There are five areas of knowledge: the arts, mathematics, history, natural sciences and human sciences.
- TOK concepts run through all of them.
- Different aspects can be considered by using the knowledge framework.
- The answers to knowledge questions play a significant role in bringing into focus the things you will need to consider when writing your essay.
- Specific examples are important as stimulus for a TOK conversation but also as evidence and justification.
- This is just a small selection of what is possible, but hopefully it will give you your own ideas and inspirations for working with TOK.
- The areas of knowledge are the basis for discussion in your TOK essay.

3 THE TOK THEMES

In this chapter you will:

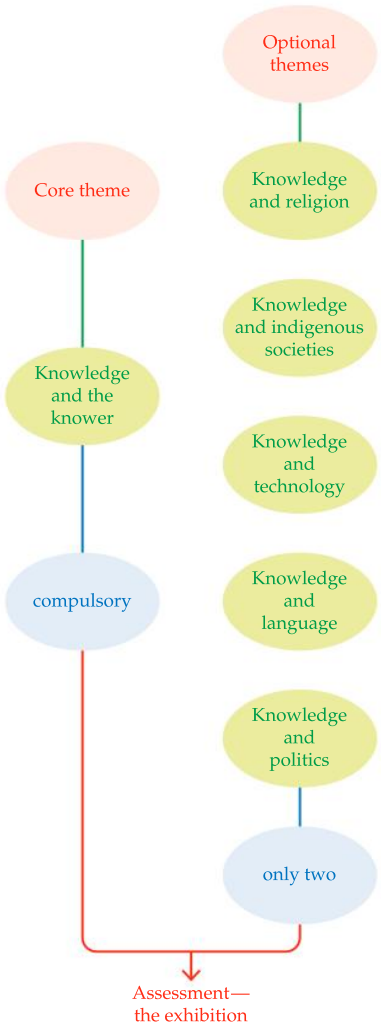
- ✔ be introduced to the themes
- ✔ do some work with each theme
- ✔ reflect on different worked examples
- ✔ consider further the role of the knowledge framework and knowledge questions
- ✔ practise your thinking on the themes.

INTRODUCTION

This chapter provides detail on each TOK theme. This will give you the chance to improve your understanding of, and practise your thinking on, the themes.

Here is a reminder of the six themes included in the course and their assessment.

- There is a compulsory core theme called knowledge and the knower.
- The five optional themes are:
  - knowledge and religion
  - knowledge and indigenous societies
  - knowledge and technology
  - knowledge and language
  - knowledge and politics.
- These themes are optional in the sense that you will study two out of the five—so not all sections of this chapter will be relevant.
- These themes are assessed through an internal assessment component: the exhibition.



▲ **Figure 3.1** The TOK themes and their assessment

In the themes you will look at factors that play a key role in shaping people's perspectives and identities and have a huge impact on the world today. The themes raise issues that you are likely to encounter in your lives within, and also outside of, your school experiences, so you will be looking at the influence of these themes on knowledge in a very broad sense.

In this chapter you will start by looking at the five optional themes. For each theme you are asked to consider a range of thinking points that start with a very general knowledge question. You are then asked to think about or work on a range of examples that provide different viewpoints on the question. To finish you will think about the areas of knowledge and the themes together and consider the compulsory core theme of knowledge and the knower.

As you can see, the themes are named differently from the areas of knowledge. The names of the themes are all in the form:

"Knowledge and …"

This is to remind you that the focus of the themes is still knowledge. For example, when you talk about knowledge and religion, the conversation should be around aspects of religious knowledge or how religion affects aspects of knowledge. This is the same for all the other optional themes and for the core theme.

To try to make this clear, a course called "indigenous societies" and a course called "knowledge and indigenous societies" are definitely not the same thing. It is clear that the one called "knowledge and indigenous societies" has a more specific focus, and it is this one that you focus on in TOK.

KNOWLEDGE AND RELIGION

Religion is a topic that excites interest from a range of positions. For a number of people it is something that provides guidance and support for many different aspects of their lives; for others it produces many questions; for another set it is seen as an area that has little direct relevance or impact. The reasons behind this are interesting to consider, so they are very much part of a TOK discussion. Religion has an impact on many parts of our lives. On a very general level it permeates thinking and it influences our ethics and morality. It affects the architecture around us, many of the cultural traditions we follow, the literature we read and the art we view. So whatever your personal position may be on religious knowledge itself, religion has some sort of cultural impact on the lives of the vast majority of people.

THINKING POINT

How does the application of religious knowledge influence our everyday lives?

Take a moment to reflect on the place in which you live. Other than buildings explicitly associated with religion, the religious practices that take place in those buildings and your own personal faith, make a list of places, artefacts and practices that have been influenced by religion.

Discussion

To demonstrate the importance of religious knowledge in your everyday life, let's look at two examples of books that discuss this issue. These are just two examples among many and there is no requirement for you to read them, but this discussion demonstrates the fact that, whatever your belief and position, religion affects knowledge in many diverse aspects of everyday life.

Example 1

Religion and Politics in the United States by Kenneth D Wald and Allison Calhoun Brown

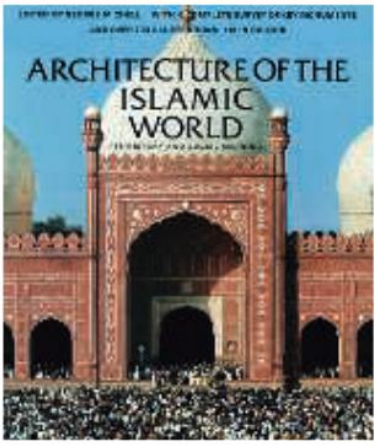
This book looks at the influences of religion on American politics from both positive and negative perspectives. These influences are viewed from the idea that they are a problem to be solved, right through to the idea that a spiritual dimension is a resource that has the capacity to improve the quality of American political life. The book suggests that:

> "religious influences are visible in all aspects of political life—the ideas about politics we entertain, the behaviour of political elites and ordinary citizens, the interpretation of public laws and the development of public programmes."
>
> *(Wald, Calhoun-Brown 2014: xi, xii)*

One of the main ideas presented by the authors is that religion and politics are intertwined in many ways in the USA. They explore ideas such as: the longevity of the significance of religion in American life; the role of creed, institution and subculture; the factors that give religion the ability to influence the policy-making process; and religion as an influence on the political attitudes and behaviours of the American public. Although there are clearly variations in how different religions have influence in different places and to different degrees, from a TOK perspective what is important to remember is that there is an influence.

Example 2

Architecture of the Islamic World: Its History and Social Meaning. Edited by George Michell



In this text it is suggested that Islamic architecture is:

> "more than just a spectacle of domes and minarets, perfumed pleasure palaces and exquisite turquoise tiles. … Islamic buildings express the religious beliefs, social and economic structure, political motivation and visual sensibility of a pervasive and unified tradition."
>
> *(Michell 1995)*

▲ **Figure 3.2** Mosque with a citadel

For example, it is suggested that the dome can be a signifier of a mosque, a palace or a tomb and is a sign of power both in a religious sense and in a secular sense. Looking at the mosque specifically when the idea of summoning people to prayer was first proposed, some way of doing this had to be found. Within Judaism originally a horn was used and within Christianity a wooden clapperboard served the purpose. Both of these were thought to be unpleasant sounding and the solution was to ask one of the loyal companions (sahabah) of the prophet Muhammad, Bilal al Habashi, who was noted for his sweetness of voice, to call the people to prayer. He was the first muezzin. Before the days of loudspeakers, there had to be some way to ensure that this call to prayer (adhan) would be heard and therefore it had to be broadcast at height, which explains the need for the minaret. This is not dissimilar to the way bells became used in churches—always positioned high up in a tower so they could be heard. However, minarets could be narrower and more graceful structures than church towers as they did not have to hold very heavy bells.

THINKING POINT

How are religious knowledge, cultural knowledge and historical knowledge linked?

One of the concepts that is central to different religions and to different cultures is the idea of the golden rule. This can be traced back over many years and through a variety of cultures and religions. It is stated in a variety of formats. A few examples are given below.

- Treat others as you would like to be treated.
- Do unto others as you would have them do unto you.
- Put yourself into someone else's shoes.
- Do not impose on others what you would not impose on yourself.

Do some research into the role of the golden rule in different religions and different cultures. Try to find a mixture of viewpoints over a range of time periods.

"The name Confucius is a Latinized combination of the surname Kong 孔 with an honorific suffix "Master" (fuzi 夫子

(Stanford Encyclopaedia of Philosophy)"

"The Analects is the work most closely associated with Confucius. It is a record of his life in fragments, collected into 20 sections.

(www.britannica.com)"

Discussion

Five different uses of the golden rule will now be considered.

Confucius

Confucius is seen in a variety of different guises—as a philosopher, a teacher and a prophet.

He lived around the time of 500 years BCE and his ideas profoundly influenced Chinese and East Asian thinking. He lived in eastern China in what is today Shandong Province. His role was to offer advice on all forms of human conduct. In modern times his thinking has come to represent many different aspects of traditional East Asian society.

A work from this period will have undergone many changes. The Analects has had many different translations and interpretations; there are many different views on exact meanings within the work. Nevertheless, it is agreed that a version of the golden rule was part of it. It is suggested this might have been formulated as: "Do not do

to others what you would not like them to do onto you". The reason for this is possibly that the negative form fits with the modesty and humility of Confucian thinking.

Ancient Egypt

There is debate about where the golden rule first appeared. One possible contender for this comes from a story from Ancient Egypt around the time of the pharaoh Amenemhat. This would be between 1900 and 1800 BCE. It is the story of a peasant Khun-Anup who accidently trespasses onto a piece of land. The caretaker of that land, Nemtynakht, takes Khun-Anup's property as punishment for the trespass. Khun-Anup seeks redress from this by taking the complaint to the local steward and is eventually heard by the pharaoh. It turns out that Khun-Anup is a very eloquent speaker and he is asked to return multiple times so that the steward and pharaoh can hear his stories.When asking the rulers to adhere to Ma'at, which refers to justice or possibly righteousness, this phrase is used: "Do for one who may do for you, that you may cause him thus to do". This is considered to be close enough to the golden rule to be seen as equivalent, as it is being used in reference to a part of the culture. In the end Khun-Anup is granted justice and the caretaker Nemtynakht is punished.

Hinduism

"The *Mahabharata* is an important source of information on the development of Hinduism between 400 BCE and 200 CE and is regarded by Hindus as both a text about dharma (Hindu moral law) and a history (itihasa, literally "that's what happened"). Appearing in its present form about 400 CE, the *Mahabharata* consists of a mass of mythological and didactic material arranged around a central heroic narrative that tells of the struggle for sovereignty between two groups of cousins, the Kauravas (sons of Dhritarashtra, the descendant of Kuru) and the Pandavas (sons of Pandu). The poem is made up of almost 100,000 couplets—about seven times the length of the *Iliad* and the *Odyssey* combined—divided into 18 parvans, or sections, plus a supplement titled *Harivamsha* ("Genealogy of the God Hari"; i.e., of Vishnu). Although it is unlikely that any single person wrote the poem, its authorship is traditionally ascribed to the sage Vyasa, who appears in the work as the grandfather of the Kauravas and the Pandavas. The date and even the historical occurrence of the war that is the central event of the *Mahabharata* are much debated."

(www.britannica.com)

The following phrase appears in the poem: "This is the sum of duty: do nothing to others that would cause you pain if done to you". As the *Mahabharata* is seen as one of the two epic poems written in Sanskrit and focused on morals, the appearance of this version of the golden rule suggests it has an important role to play for those who follow the religion.

Judaism

The version of the golden rule is formed as "love your neighbour as yourself" and can be found in the book of Leviticus in the Torah.

> "As early as the second century, Rabbi Akiba proclaimed that the Golden Rule is "the great principle of Judaism" itself.
>
> Of course, there are also problems with the Golden Rule. The most common challenge is the meaning of "neighbor." Does neighbor only mean someone you already know or more narrowly, in the original context of the verse, does it represent only your Jewish neighbor? A second challenge is to the words "as yourself". What happens if you love yourself too much or not enough? Then what happens to your neighbor? And is self-love ultimately too narcissistic and thus inadequate as a basis for any system of universal ethics?"
>
> *(Sussman reformjudaism.org, undated)*

Ancient Greece

"THE GOLDEN RULE—"Do TO OTHERS as you want others to do to you"—evolved in Greek culture to become (when bolstered with Jewish and Christian versions) the most widely recognized formula of "natural law" ethics in European cultural history. This formula, however, did not spring full-blown from the head of Zeus. It emerged as an expression of what we may call golden-rule thinking, involving a variety of specific formulas and sometimes engaging in the crucial imaginative role reversal without appeal to any formula whatsoever. Homer anticipated the golden rule; Herodotus recorded it as a moral commitment with political implications; the sophist Isocrates used it as a counsel of prudence within the popular tradition of repaying good with good and harm with harm; Plato used golden-rule thinking with a degree of irony and had limited use for a related maxim; Aristotle adapted the rule for his concept of friendship; and the Stoics extended its scope so that it became a universal norm of human relationships."

(Wattles 1993)

Conclusion

It is clear that *the golden rule* is a phrase many different cultures live by. In more modern times it is seen as something that creates commonality across religions. However, as you can see from the above, it is not solely about what organized religion has to say. Harry J Gensler in his book *Ethics and the Golden Rule* provides a chronology of the golden rule which suggests it actually has origins in culture, religion and

history. To give you an idea of the scope, 1000 years of that chronology is reproduced in Table 3.1.

354–430 Augustine says that the golden rule is part of every nation's wisdom and leads us to love God and neighbor (since we want both to love us). He gives perhaps the first golden-rule objection: if we want bad things done to us (e.g., we want others to get us drunk), by the golden rule we'd have a duty to do these things to others. He in effect suggests taking the golden rule to mean "Whatever good things you want done to yourself, do to others." [Actually, he thought that willing, as opposed to desiring, is always for the good; so he formulated the golden rule in terms of willing.]
610 Muhammad receives the Qur'an, which instructs us to do good to all (4:36) and includes the golden-rule like saying: "Woe to those who cheat: they demand a fair measure from others but they do not give it themselves" (83:1-3). Several Hadiths (Bukhari 1:2:12, Muslim 1:72f, and An-Nawawi 13) attribute this golden rule to Muhammad: "None of you is a true believer unless he wishes for his brother what he wishes for himself."
c. 700 Shintoism in Japan expresses the golden rule: "Be charitable to all beings, love is God's representative. Don't forget that the world is one great family. The heart of the person before you is a mirror; see there your own form."
c. 810 The Book of Kells, a gospel book lavishly illustrated by Irish monks, illustrates the golden rule as a dog extending a paw of friendship to a rabbit.
c. 890 King Arthur's Laws emphasizes the golden rule: "What you will that others not do to you, don't do to others. From this one law we can judge rightly."
c. 1093 Muslim Abu Hamid al-Ghazali in his Disciplining the Soul (the section on discovering faults) uses the golden rule: "Were all people only to renounce the things they dislike in others, they would not need anyone to discipline them."
c. 1170 Moses Maimonides's Sefer Hamitzvoth (positive commandment 208) says: "Whatever I wish for myself, I am to wish for another; and whatever I do not wish for myself or for my friends, I am not to wish for another. This injunction is contained in His words: 'Love your neighbor as yourself.'"
c. 1200 Inca leader Manco Cápac in Peru teaches: "Each one should do unto others as he would have others do unto him." (Wattles 1996: 192)
c. 1200 The Tales of Sendebar, a popular romance in many languages, ends with words from the sage Sendebar to a king of India: "'My request is that you don't do to your neighbor what is hateful to you and that you love your neighbor as yourself.' The King did as Sendebar counseled him and was wiser than all the sages of India." (Epstein 1967: 297-9)
c. 1220 Francis of Assisi, who often invokes the golden rule, at least four times formulates it using a same-situation clause (the earliest such use that I'm aware of), as in "Blessed is the person who supports his neighbor in his weakness as he would want to be supported were he in a similar situation."
1259 Gulistan, by the Persian poet Sa'di, has these verses, which are now displayed at the entrance of the United Nations Hall of Nations: "Human beings are members of a whole, In creation of one essence and soul. If one member is afflicted with pain, Other members uneasy will remain. If you have no sympathy for human pain, The name of human you cannot retain."
1265–74 Thomas Aquinas's Summa Theologica (I-II, q. 94, a. 4) says the golden rule is common to the gospels and to human reason. He adds (I-II, q. 99, a. 1) that "when it is said, 'All things whatsoever you would that men should do to you, do you also to them,' this is an explanation of the rule of neighborly love contained implicitly in the words, 'You shall love your neighbor as yourself.'"
c. 1400 Hindu Songs of Kabir (65) teach the golden rule: "One who is kind and who practices righteousness, who considers all creatures on earth as his own self, attains the Immortal Being; the true God is ever with him."
c. 1400 Sikhism from India teaches: "Conquer your egotism. As you regard yourself, regard others as well." (Shri Guru Granth Sahib, Raag Aasaa 8:134)

▲ **Table 3.1**

(www.harryhiker.com/chronology.htm)

KNOWLEDGE AND INDIGENOUS SOCIETIES

Knowledge and indigenous societies is a broad category. The term *indigenous societies* is a difficult one to define, but a good place to start is the United Nations Paper on the concept of indigenous people. It suggests that:

> "indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system."
>
> *(United Nations 2004)*

A variety of terms such as *aboriginal*, *first nations* and *native* are all used on a local basis and any aspects of knowledge related to these communities is fine for discussion within TOK. However, in TOK not only is knowledge within an indigenous community considered, but how that knowledge has come to be used or have an influence outside of that community is also part of discussion. Thus there is a very strong link to the concept of culture. Broader considerations of culture on different forms of knowledge could also be included within the theme.

THINKING POINT

Is cultural appropriation an example of a violation of collective intellectual property rights?

Over the past 10 years the term *cultural appropriation* has worked itself into mainstream language. Before that it was very much the domain of academics looking at cultural studies and anthropology. On a neutral level the concept is simply about the adoption of elements of one culture by members of another culture. As long as there is no power inequity or perceived power inequity between the two then there is no problem. In one sense you all perform acts of cultural appropriation each day: the shirt you are wearing might be popular in Indian culture, the sandals you are wearing might be seen as part of a Mediterranean culture and you may have had Korean barbeque for dinner last night, but none of this would be seen as problematic. On a basic level there is no issue with appropriating something from one culture and using it in another. The problem with this comes when there is any form of power inequity or it is disrespectful to the culture from which it came. Alternatively, using any form of clothing or styling that has significant meaning in one culture in a way where that meaning is disrespected becomes problematic. This needs to be handled very carefully when there is also a clear difference in power between the two cultures. Of course, as with many of these things, there are some very fine lines and there are also interesting conversations about who becomes the expert when adjudicating between inappropriate and appropriate cultural appropriation. Almost by definition today the term *cultural appropriation* is seen as having a negative influence. You will now look at a variety of situations.

Why might the following situations be considered cultural appropriation?

All of these situations are made up and any similarities to any events that have happened are coincidental.

Situation 1

A white female model wears a copy of a Native American war bonnet (similar to the one shown in Figure 3.3) in a fashion show in Italy. The fashion show features predominantly Italian models and the designer is European.

▲ **Figure 3.3** A native Blackfoot chief wearing a split-horn bison bonnet

▲ **Figure 3.4** Tanzanian hair braids

▲ **Figure 3.5** Traditional Chinese Tang Dynasty costume

Situation 2

A white female student has braids put in her hair (as shown in Figure 3.4). She is studying African history at university, has spent time in sub-Saharan Africa and has a diverse set of friends, including a number who are from Kenya and Tanzania. It was one of her Tanzanian friends who put the braids in.

Situation 3

A well-known model is invited to an event celebrating Chinese history. The event is run in conjunction with a famous museum showing artefacts from a specific period of Chinese history. At this event the model is dressed in a very expensive replica traditional Chinese dress, similar to the one shown in Figure 3.5. The model's dress has been made by a Chinese designer in China using a Chinese workforce.

Situation 4

A white man is wearing a Shuka (a Maasai blanket) and a replica piece of Maasai jewellery around his neck. He knows no one who is Maasai and knows nothing of the culture—he just liked the Shuka and the jewellery and thought it would be "a bit different".

▲ **Figure 3.6** Maasai men in traditional dress

Discussion

Situation 1

There has been and to some extent continues to be power inequity relating to the position of Native Americans and their culture within their own country.

The Native American war bonnet has specific cultural significance and sacred meaning. In a fashion show its cultural significance is completely lost. War bonnets such as these would not be worn by women. There is no connection between the war bonnet and the female model wearing it, the location of the fashion show or the designer.

Situation 2

This could be seen as cultural appropriation because the braiding of hair in an African context is linked to your tribe, marital status and wealth. There is no indication that this has been taken into account. However, from the information given, it could also not be cultural appropriation because the student has an understanding of the culture—she is studying it and has spent time in the culture. The fact that it was somebody from within the culture who braided her hair is further support for this not being cultural appropriation. Of course, why the student chose to do this is not known, nor is the intention, but it would appear that it has been done in a culturally sensitive way.

Situation 3

Given that this situation involves a high-profile model at a high-profile event, the potential for cultural appropriation definitely exists. However, the fact that the event took place as part of a bigger cultural celebration, that the dress was created by a Chinese designer and that it was made in China suggests that a lot of care was taken to ensure that this was not viewed as cultural appropriation. Again, any precise intentions are not stated, but overall it is unlikely that this would be seen as cultural appropriation.

Situation 4

This could be seen as a case where the person involved is probably not even aware that what he is wearing could cause a discussion about cultural appropriation. The fact that no thought was put into this suggests that there was not any intention to give offence. However, this lack of awareness suggests this is a form of cultural appropriation and at the very least an awareness of the significance of the items would have helped the situation. Also, no information is given about where these items were bought and in what context. If they were sold by the Maasai to raise funds for Maasai projects, then there would be less of a problem.

THINKING POINT

What is the role of oral tradition in enabling knowledge to be handed down through generations?

Storytelling has a tradition running through many different cultures over many different time periods. Here are two examples.

Example 1: *One Thousand and One Arabian Nights*

Many of you will be familiar with the story of *One Thousand and One Nights* or *The Arabian Nights*. The story goes that the King Shahryar is betrayed by his wife and after finding this out he kills her and all those involved. However, his rage is so intense that he then marries a woman each day and at the end of each day he kills her. Ultimately he marries Sheherezade, who has devised a scheme to stop his cruel plan. Each night she tells him a story, but at the end of the night she leaves it unfinished, promising to finish it the next evening. The king enjoys the story so much that each night he is persuaded not to kill her. In the end he stops his violent action.

Example 2: *Māori legends from New Zealand*

Many legends form the basis of Māori beliefs, revealing how pre-European Māori saw the world. Here is a summary of one of the most famous.

Te Ika a Maui, the creation of the North Island

Take a look at a map of New Zealand – doesn't the North Island look a heap like a fish? According to Māori history, the North Island of New Zealand is known as Te Ika a Maui—'Maui's fish'. Maui appears in many Māori and Polynesian legends; he was the clever, gifted demigod of supernatural parents. But one of his most impressive achievements was fishing up New Zealand's North Island.

The story goes that because Maui's brothers weren't too fond of him, they decided to leave him behind when they went out fishing one day. Maui overhead them chatting, and secretly made a fishhook from an ancestral jawbone before hiding under the floorboards of his brothers' canoe.

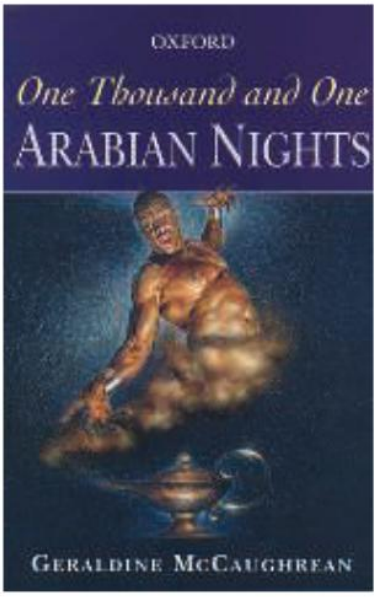
Once the canoe was far off shore, Maui jumped out from under the floorboards and threw his fishhook over the side of the canoe. Suddenly, Maui felt the hook touch something, and it dug in fast. With the help of his brothers, Maui hauled the fish to the earth's surface. Right away, before Maui could appease Tangaroa, the god of the sea, his brothers began to carve out bits of the fish—these are the mountains, lakes, valleys and rocky shorelines of the North Island. The fish's head is in the south of the island, and the tail is at the top. New Zealand's South Island is known as Te Waka a Maui, or 'Maui's canoe', and the Stewart Island is Te Punga a Maui—Maui's anchor stone.

www.tamakimaorivillage.co.nz/blog/maori-culture-in-new-zealand-legends/

Here are some more ways to explore the role of oral tradition.

- You could look into the two examples further. Find a copy of *One Thousand and One Arabian Nights* and read a number of the stories. You could also look for examples of Māori legends.
- If the area where you live has its own examples of storytelling, look into some examples.
- In a European context, investigate the role of fairy tales, which often warn about the consequences of certain behaviours.

Whatever examples you use, make notes giving a summary of each story and a brief description of what the reader learns.



Discussion

The two examples above demonstrate the importance of storytelling and oral traditions to different cultures. You will now consider some aspects of why oral traditions were so important in many cultures in the past in terms of the knowledge they transmit. You will also think about how these traditions live on in modern society.

Example 1

Although the story of *One Thousand and One Arabian Nights* is not true, it does reflect the importance of storytelling in that region for many centuries. Hakawati, the ancient Arab art of storytelling, has made something of a comeback in the region in recent times.

Hakawati does not involve simple stories told passively to children. Often the stories are intertwined and sometimes a third story emerges from the first two.

"All of this is done using the tools of allegory, folklore, satire, music and a visual spectacle of grand sweeping gestures and facial expressions to finally create an enthralling experience for listeners. Hakawati are often allegorical tales that talk about ideas such as triumph of good over evil, the importance of being humble and generous and helping the poor, among many other timeless truths."

https://gulfnews.com/entertainment/arts-culture/hakawati-the-ancientarab-art-of-storytelling-1.712001. This extract and the next are taken from "Hakawati: the ancient Arab art of storytelling", published in Gulf News, 5 April 2004—an article about Ahmad Yousuf, who is trying to restore the art form of hakawati in the UAE.

Hakawati can take place in a variety of settings as long as there is a space for people to meet. In one sense this is more akin to one-man street theatre than to what is often thought of as storytelling. As you can imagine, in a time before television and cinema hakawati was a popular leisure time activity. It is very much about bringing stories to life.

The five important elements to hakawati

- The narrative: Every story selected should have a strong plot that captures the interest of listeners.
- The characters: There must be a minimum of three to four characters in the story who interact and move the story towards its climax.
- The action: The story must have sound and fury—a clash of kings, an adventure on high seas or a quest for something that is undertaken over a vast expanse of sand dunes. The sweep of the story and its setting is what engages the listener.
- The spectacle: This includes music, soundtrack and colours that work as symbols. For example, blue to represent the sea or yellow to represent the sand or sun. The spectacle helps the audience to be lead willingly into the thick of the tale.
- The message: Stories must act as an important community service and the storyteller must shoulder the responsibility of communicating the importance of living a principled life to the people at large.

https://gulfnews.com/entertainment/arts-culture/hakawati-the-ancient-arab-art-of-storytelling-1.712001.

Example 2

Within Māori culture, storytelling also holds a very important place. It is often performed in a traditional meeting place, such as a marae. Māori storytelling, as with hakawati:

"is much more than just narrating stories; it also comprises dance (haka), songs (waiata), chants and prayers (karakia) and poems. The Māori used all kinds of fantastical elements, lots of imagery as well as facial expressions and tones of voice to convey the emotion surrounding a story. Great value is placed on detail and to dedicated, correct storytelling.

Before the arrival of the first Europeans in New Zealand, no written language existed in the Māori society. All information and knowledge could only survive if passed on successfully from one generation to the next. Through this, they formed and cultivated their own mythology to record their past and tell the stories and legends of gods, heroes and tribal leaders.

These legends and myths are very diverse and often connected to certain places, like mountains or lakes which have great importance locally. The most important ones are the legends of the demi-god Maui, the stories of Kupe's travels around New Zealand and of course the many stories about the gods of the Māori, starting with a story about the Creation."

(https://hakatours.com/blog/maori-mythology/)

This is also a case of ensuring the survival of the Te Reo language (Māori language). Throughout the early 20th century the use of the language was diminishing and was discouraged. However, by the 1970s things began to change and a concentrated effort was made."Māori groups, tribes and leaders connected to build and solidify their language. The same cities, schools and workplaces that had once shunned Te Reo were now embracing it" (www.tamakimaorivillage.co.nz/blog/maori-language-history/).

KNOWLEDGE AND LANGUAGE

Language is something that is fundamental to being human. According to the ethnologue (www.ethnologue.com) there are close to 7,000 different languages in the world. Of course what counts as a language is in itself not a straightforward question. You can ask about the status as languages of these examples: dialect (a regional variation or a variation spoken by a specific group); pidgin (a means of communication between two groups without a common language); and creole (a stable language developed from the simplification and mixing of different languages). Questions are also asked about the status of mathematics and music as language. It is not just the languages themselves that are of interest, but concepts such as paralanguage; this considers how you speak the language, in terms of tone, pitch and intonation, and how this has the potential to change meaning.

THINKING POINT

How does the translation of language affect what we understand?

Take the following phrases from English and translate them into other languages.

1. "Blood is thicker than water." (English proverb)
2. "All the world's a stage, and all the men and women merely players. They have their exits and their entrances; and one man in his time plays many parts." (Shakespeare, *As You Like It*, Act 2, Scene 7)

3. "Do you fancy a few sherbets after work tonight, mate?" (A question asked in British English slang)

Here are few tips about translating the three phrases.

- If you speak a language other than English then you can make direct translations.
- You can use translation software. If you do this, then it is worth translating twice—translate from English to the target language and then repeat the process from the target language back to English. This will give you an indication of the accuracy of the translation.
- If you are using translation software, then try a few different languages.
- You might want to think about the meaning of these phrases and rewrite them in a more literal form of English before you translate them.

Discussion

Here are a few thoughts about the translations.

1. "Blood is thicker than water." A more literal meaning might be "Family can be relied upon more than friends". As this is a proverb it is expressed in metaphorical terms and this is difficult for translation—a majority of words have a one-to-one correspondence when translating, but that is not true when translating metaphors. For example, the equivalent proverb in Arabic would loosely translate as the Arab Bedouin saying: "I, against my brothers; I and my brothers against my cousins; I and my brothers and my cousins against the world".
2. "All the world's a stage, and all the men and women merely players. They have their exits and their entrances; and one man in his time plays many parts." This highlights the problem of translating poetic language. The idea here is that the world is a stage and life is a play that is performed on the stage. Within that life different people play different roles. All the individuals also have different roles to play throughout their lives.
3. "Do you fancy a few sherbets after work tonight, mate?" This highlights the problem with slang terms and is also the case when trying to translate dialect. The key terms here to consider are *do you fancy* meaning *would you like*, *sherbet* which is the slang for *beer* and *mate* which can be translated as *my friend*—so in more formal English the question is: "Would you like to go to drink a few glasses of beer after work tonight, my friend?" However, the tone of this is very formal; the closest accurate translation to the slang version in both tone and meaning would be: "Would you like to go for a beer tonight after work?"

Overall, providing accurate translation is not wholly straightforward. Providing a literal translation is often possible, but to produce the same style of language and the same tone is less straightforward. It is in these cases where the most effective translation is not a literal translation. This can be made harder if a specific concept does not have a direct translation into the target language. For example, the word *privacy* has no single translation in Italian—it depends on the sort of privacy being described.

THINKING POINT

What aspects of language other than the words used affect meaning?

"It's not what you say, it's how you say it."

Five different things that affect spoken language are:

- tone
- accent
- gestures
- facial expressions
- silence.

Choose three of these and provide examples of how each can affect the meaning of the words spoken.

Discussion

The focus here is on the idea of non-verbal communication or paralanguage. The term *paralanguage* involves the study of what helps to communicate meaning other than the words themselves. This involves the ways in which those words are said and how other sounds come from the mouth, along with more general aspects of body language. The study of paralanguage has been around for many years, but became an area of formal study in the 1950s after the work done by George L Trager. Paralanguage includes tone, accent, gestures, facial expressions and silence. Here are a few thoughts on each of them.

Tone

The tone of something has profound influence on the meaning of what is being said. For example, if you say "You must be joking", your tone influences what you mean. If you say this using a sarcastic tone the receiver understands that you mean the opposite of what you are saying. Consider the question: "Do you want to go to see a movie tonight? The response might be "Yeah, that's great". The tone in which this is spoken dictates the meaning. Spoken in an elevated tone and quickly it would mean "I really want to do that". Spoken in a lower tone and slowly it would mean "I am not really interested".

Accent

It is well known that the accent with which we speak is part of our identity. This is recognized in different languages and in different countries. For this discussion the focus will be on English.

There are a great many varieties of spoken English and there are many recognizable accents. These can be on a country level, where the difference between speakers from the UK, South Africa, Canada, Australia, New Zealand and the USA can easily be noted. It may also be within the country itself. So within the UK, it can be split into English, Irish, Scottish and Welsh accents and from there to regions and cities, for instance London, Liverpool, Birmingham, Newcastle upon Tyne, Glasgow, south-west England and Yorkshire. Some of these have specific names—those from Newcastle upon Tyne could have a Geordie accent and those from Liverpool a Scouse accent. There are even finer regional variations, which are harder to distinguish by the untrained ear, but are immediately noticed at a local level. Liverpool and Manchester are only 30 miles apart, but natives of these cities have very different accents. However, the towns in between also have their own variations.

> "When a funeral planning business recently decided to place its contact centre in Newport, South Wales, it said it was doing so because Welsh accents sounded more empathetic and consoling—beating off competition from Teeside, another popular call centre location thought to have a friendly accent."
>
> (Howley 2017)

> Listeners typically get to judge speakers on competence and status traits, like intelligence and self-confidence, as well as social attractiveness traits, such as friendliness and sincerity.
>
> (Howley 2017)

What is interesting is that all these accents come with perceived character traits and signifiers of identity.

Many researchers have investigated why people have such strong opinions about accents.

In the UK, for example, standard accents tend to be rated highly on status and competence characteristics, while regional accents are consistently viewed more favourably for social attractiveness traits. However, the consistency only applies to first language English speakers who live in the UK. Non-native speakers from outside the UK show very different results, thus demonstrating that in fact there is nothing innately attractive or ugly about how an accent sounds. So where do these attitudes come from? This is probably connected to social and cultural pressure where standard accents are seen as "correct" and therefore everything else is to some degree "incorrect". For example, if you want a good job and success then there is a particular accent you should use. In terms of local accents, there are links to a sense of belonging, a sense of community and a belief that your community will look after you.

Of course, people change their accent depending on who they speak to—this is called language accommodation—and much of this is not conscious. There is often an intuitive awareness of "how we should sound". The result is that the accent with which you speak influences how people see you and how seriously they view the knowledge you have.

Gestures

Gestures can be used in a variety of ways. When you speak, if you are standing you rarely stand absolutely still and if you are sitting you often make hand and head movements. These are all part of how you communicate. For example, keeping eye contact and occasionally nodding your head is a way of telling others that you are interested in what they are saying. Try asking someone to tell you a story or anecdote and while the person is doing this make no eye contact and focus on things such as your hands or the table. The person will quickly get the message you are not interested. In many ways it is not what your words say but what your body says that provides people with some certainty of the success (or lack of success) with which they have communicated.

However, you do need to be very careful about specific gestures as these are influenced by cultural contexts. Special care needs to be taken with hand gestures. These include the OK gesture—a circle formed using the thumb and forefinger, the V gesture using the forefinger and middle finger (the way your V faces sends completely different messages), the thumbs-up gesture, the stop gesture (holding up the palm of your hand) and the fingers-crossed gesture. Similarly, you need to be careful with head shaking and nodding. In many countries the nod means yes and the shake means no. However, there are countries where the opposite is true and also countries where it is about dipping and tilting the head—that is, a single movement rather than a repeated movement.

Facial expressions

When we speak our facial expressions can communicate an emotion, as is the case when we hear a story or a conversation. These facial expressions are instinctive and initially cannot be controlled. Some

early work on this was undertaken by Charles Darwin, but it was the work in the 1960s of Paul Ekman, an American psychologist, that has become associated with this field. He suggested and demonstrated that there are seven basic emotions that have their own unique and distinctive facial expressions. These emotions are: happiness, sadness, fear, disgust, anger, contempt and surprise (paulekman.com).

What Ekman initially thought was that the unique expressions for these emotions were culturally learned and the expression on your face when experiencing one of these emotions would depend on where you were born and where you grew up. However, what his research went on to demonstrate was that these seven were universally recognized. These conclusions have widely stood for the past 50 years, but they have been questioned recently. The basic premise that emotions create natural universal physiological reactions is not in question, but there is some belief that reactions and interpretations can vary from culture to culture. For those who watch carefully, the initial look on your face tells the viewer how you are feeling.

Silence

In one sense silence is the natural state of the world since it is often language that fills it; in this case there is no meaning to it. However, within speech itself the return to the "natural state" could indicate that something disconcerting or unexpected is to be expected—think of how actors deliver their lines in plays. Sometimes silence takes the place of a word and the word is implied by the context. Villoro (2017) described different types of silence as follows.

> "There are accomplice silences that, without words, say what the other wanted to hear. There are silences that condemn and condone, and others that confer and submit. There are timid silences that express, without meaning to, the words that they do not wish to pronounce; that silence not only signals the mood of the person (their reprobation or disgust, their modesty or doubt), but also signifies something about the objective situation."
>
> *(Villoro 2017)*

Here are some thoughts from Kate Sullivan, expert on intercultural fluency at the British Council.

Silence can have lots of meanings.

Silence can mean different things to different people and in different situations—some positive, some negative and many neutral. It could be a sign of:

- feeling very comfortable with the speaker
- respect for the person who is speaking—especially if they are in a senior position or are more experienced
- reflecting on what the speaker has said before answering
- agreement with what is being said
- wanting to avoid embarrassing the speaker by openly asking questions or disagreeing in public
- being unsure of how to respond
- lack of understanding due to language barriers
- discomfort in the situation
- deliberately making the other person feel uncomfortable.

(Sullivan 2017)

These examples show that when encountering silence, we should be careful how we interpret it. Its interpretation is highly dependent on both the culture and the context.

KNOWLEDGE AND TECHNOLOGY

Knowledge and technology is an interesting theme to consider in terms of change—for example in the last 50 years, how much this area has changed and the speed of that change.

Think about the way the world was 50 years ago. Imagine that as a child you are doing an elementary school project about volcanoes. You have to find out information and produce a poster. What has changed in 50 years in terms of how you might do this?

Completing your school project on volcanoes—50 years ago

The first problem would be finding suitable sources. You might have been lucky enough to have a set of encyclopaedias or other informative books at home. However, if you wanted pictures you would still have a problem. Your parents would be unlikely to let you cut pictures out of an expensive set of encyclopaedias or other books. There were no mobile phones with which to take pictures. There were no computers on which you could print those pictures. You might have found something in an old magazine or a newspaper that you could cut out to use, but you would have to search every volume physically—it is unlikely there would be an index and certainly no computer with a list of items under discussion.

There might have been a television programme on volcanoes and your family might have been one of those who owned a television. If so, you would also have to be lucky in that the time of the broadcast would need to fit your schedule. There was no catch-up television and no programme recording. You would have one chance of watching and getting the information you needed. Anything that needed to be remembered would have to be written down.

Had the first two methods of gaining information failed, then you would probably go a local public library. You would be limited by what books that library could offer. If a book that looked useful was in storage you might wait for a few hours while it was fetched—it would be a physical item, it could not be brought up on a computer. The book might be in a different library. To check, the librarian would telephone to find out—there were no databases to check. If the book was at another library, unless you could go there, you would need to wait for the book to be transported by road to your library.

Now consider creating your poster. One of your parents may have had a typewriter at home, in which case you could have typed out your ideas before adding them to the poster. However, any errors would be difficult to correct—there was no delete button. It is more likely that you would have written your text. Then you would probably have drawn your own pictures and stuck them on with glue.

This is what was involved in completing a school project in the early 1970s and beyond. You may well wonder how people worked without technology then; the answer is that their tasks took more time to complete and they knew no other methods. Technology is probably one of the things that has changed the most and the fastest in the last 50 years and its impact on many aspects of knowledge has been massive.

THINKING POINT

To what extent has technology changed how we know?

Here you will begin by reflecting on how knowledge is preserved and the differences made by technology. Do you know how the things listed below were done 30 years ago? If not, do a bit of research or ask an older person. Back then, how would you have:

- found a friend's new house in a city you do not know
- found out the structure of diamonds
- found out who played James Bond in the movie *Moonraker*
- shared the photographs from your 18th birthday
- remembered your best friend's house number?

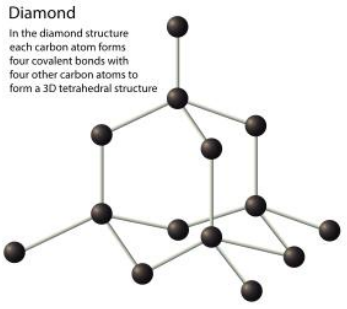
Discussion

Let's compare some of the experiences when carrying out these activities.

Finding a house

Today a quick look at the phone will show how to get from any point to the front door. However, 30 years ago it was much less simple. If you were lucky you would have a detailed map of the area and you could look up the street name. If not, or if the thought of trying to read a map worried you, then the most common way forward was that you were given directions on a piece of paper. Obviously, there were a wide variety of styles—some directions were hand-drawn maps, some led you by landmarks, others gave you great detail about left turns, right turns and traffic lights. You just had to hope that the person writing them knew the difference between left and right!

All this information is now stored electronically. Most maps are now viewed online and there are many programs that will tell you in very simple terms how to get from one point to another. This means that this knowledge is preserved very accurately and is also very easy to change—for example, if a new road is built it is a matter of changing it on a digital master, rather than reprinting many paper maps. It also raises a question about the loss of certain skills, such as map reading.



▲ **Figure 3.7** A diamond's structure

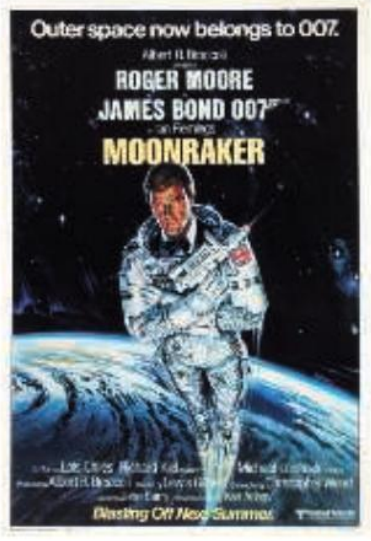
If you get verbal directions you trust them. This is fine, but where are you when the internet connection gives up?

The structure of diamonds

Today, to investigate the structure of diamonds, a quick look at the phone and a little bit of knowledge of how to find a reliable source will complete the task. Thirty years ago, you looked things up in books. This was not simple, as you had to find a way of getting access to the book that would give you information. It also had another interesting effect in that it often stimulated conversation—and if you were unlucky, argument. One of the quickest ways of getting an answer to a question was to ask someone else, hoping that they were an authority source of information on what you were asking. If not, long conversations could ensue or one authority source would dispute another's findings, prolonging the conversation even further.

Factual information such as the structure of diamonds is now the preserve of the internet as well as in textbooks. If the information remains a part of what is required to be learned by students at school then it is likely to exist in school textbooks. However, most other references are stored on the internet. This has had interesting implications for memory. As everything is at the touch of a button the need to remember any of these details, unless you use them on a regular basis, is gone. However, although there is no longer a need to remember a lot of useless facts, the training to remember things that are useful has also potentially diminished.

Who played James Bond?



Today a quick look at the phone will tell you that Roger Moore played James Bond in *Moonraker*. Finding out trivia (things that have little intrinsic importance but you still want to know at a particular moment in time) was something that took up a lot of time 30 years ago. Again, it involved searching through books or looking for a person who had that elusive sort of knowledge. However, to find out certain sorts of trivia a specific publication was needed. This was whenever you needed to know the biggest or smallest, fastest or slowest, heaviest or lightest—any form of extreme of something—and what you needed was the *Guinness Book of World Records*.

This sort of information is now very easy to find on the internet, but can be sometimes difficult to verify as true. It is a matter of knowing how we can trust websites and the information they provide. This is about knowing which websites are monitored and updated by people who have a degree of expertise in what they claim to be expert in. The challenge in the past was finding the information, but most of what you found was trustworthy—this could be assumed. The challenge now is that information is there almost instantaneously but you may have to find some time to verify that it is accurate. The challenge in the 21st century is preserving accurate knowledge. On much of the internet anybody can post anything and there is nobody there to say whether it is accurate or not. Even when a site is monitored, there is so much information available that it is difficult to ensure complete accuracy. There is much more knowledge easily available than previously, but we have to be careful about what we believe. Has acquiring collective knowledge become much quicker? The answer is probably that it has not—time is just spent on different things.

Your 18th birthday photographs

You can use your phone to take the pictures and then upload them to a social media site. In the past you needed to have a camera and needed to ensure that it was loaded with film. Once you had taken some pictures you would need to finish the film (most films took 24 or 36 photographs). You would then have to take the film to a shop where somebody would process the film and then print out your photographs. If your friends wanted copies of the photographs you would then take the negatives back to the shop and ask for copies to be made.

This raises interesting questions about manipulation of photographs for specific purposes. It is argued that today the manipulation of photographs is easier, as once a photograph is uploaded to a computer there are a variety of programs that allow you to make changes. You have to be careful about trusting photographic evidence and in terms of the collective memory and the preservation of knowledge it needs to be monitored closely. However, it is essential not to overstate this.

▲ **Figure 3.8** Lenin and Trotsky on the second anniversary of the October Revolution

The manipulation of photographs is as old as the art form itself. Figure 3.8 is the famous photograph of Lenin and Trotsky taken on the second anniversary of the October Revolution. Once Trotsky fell from a position of power and influence, a number of these early photographs were changed to suggest that Trotsky had not been part of this. Photographic deceptions could be carried out effectively long before the days of computer graphics.

Remembering a house number

Your best friend's house number will now be safely stored in the phone. However, before mobile phones, the address book was the answer. This contained the address and very often the (landline) phone number of everyone you knew and had ever known. As people moved house on a reasonably regular basis and consequently changed their phone numbers (it was relatively unusual to take your phone number with you when you moved), these books also contained a lot of crossing out.

For the most part paper address books are now obsolete from people's lives, but it does mean we are less likely to remember things—having to write down information and not always having it to hand meant that you often remembered things better. Interestingly, the one thing that has not changed is the need to back-up information. Just as losing the phone causes panic, losing your address book would also cause a large degree of upset. In both cases the data needed to be stored safely.

THINKING POINT

How has technology enhanced knowledge gained by sense perception?

The way you interact with the world is all processed through the brain—all five aspects of sense perception (touch, sight, smell, hearing and taste) are processed through the brain. On a day-to-day level this works well: you are able to understand what you need to understand and work within the capabilities of what you have. However, as human beings have advanced, and wanted to know more, there has been a strong realization that our senses will only take us so far.

One of the prime roles for technology has been to help us to increase our abilities in sense perception. This has happened in two ways. Firstly, technology has been used to overcome any imperfections we have in our sense perception. For example, the creation of spectacles has allowed many people to improve their sight. Secondly, this has also allowed our senses to go beyond what is possible just using the human body. For example, the invention of the microscope has allowed human beings to understand the aspects of the human body better (making the small much bigger) and the invention of the telescope has allowed the human race to explore its surroundings (making the very far away appear much nearer).

Investigate two other inventions:

- one that that has cured a defect in human sense perception
- one that has improved our ability to use a specific aspect of human sense perception.

Reflect on how knowledge has been enhanced because of them.

Discussion

In this section you will reflect on some of the improvements in technology that have improved our ability to perceive the world and others where technology has corrected a defect.

Taste

Traditional treatments for people who have a problem with taste include taking medication or magnetic stimulation, neither of which has been wholly successful. Technology has now provided a new way forward called the "Taste Buddy" which has been developed by researchers at City University of London. A small tab is placed on the tongue that emits a very low-level electric current to stimulate the taste buds, which can trick the brain into thinking that there are sweet and salty tastes in the mouth. A potential use is to allow people to eat healthily while their taste buds tell them they are eating their favourite unhealthy foods.

Touch

Garrett Anderson was deployed in Iraq with the US Army and suffered an injury from a bomb blast that caused him to lose his right arm below the elbow. He now wears a prosthetic and can grasp objects and have basic mobility. However, he has absolutely no sense of touch. An invention from Northwestern University may now help. Researchers at the university have developed a new second-skin "virtual reality" technology. The device comes in the form of a patch and is made from silicone that sticks to the skin. Embedded in the silicone are a number of actuators that emit electric impulses or vibrations. In Garrett's case the device was integrated with his prosthetic, placed on the skin above the elbow. Garrett reported he could feel sensations from his prosthetic fingertips transmitted to his arm. Furthermore, the researchers suggest that the device could also be used for social interactions, offering a stroke of an arm to a loved one during a video call, or a pat of encouragement to a teammate during a virtual game.

Sight

Electron microscopy works in a similar way to a standard microscope except it uses electrons rather than photons of light. The electrons come from an electron gun and are focused into a beam using magnetic lenses which is then shone onto the sample. Data is then collected from transmitted electrons that have passed through the sample and are recorded. This results in very fine, detailed analysis far beyond what is possible with a conventional microscope. Uses include analysis of gunshot residue in forensic investigations, identifying new bacteria and virulent strains, the testing of vaccines and dating historic ruins.

Smell

When you think of the sense of smell you often think about pleasant things such as the scent of flowers, or as a warning such as the smell of burning. However, there are many things that have their own distinctive smell. Sometimes noted in war literature, there is the idea of the smell of fear. Although used metaphorically it is now accepted that this has a degree of truth to it; it is the adrenaline that is excreted that has a specific scent. Dogs are used in bomb detection as they have a superior sense of smell to humans and trials have taken place using dogs to detect certain diseases. This has now been taken further using technology. In different cancers the early diagnoses of malignant tumours are important in terms of treatment and saving lives, and the fact that these have different smells is now being used. When you breathe out, your breath is made up of oxygen, carbon dioxide, nitrogen, water, inert gases and volatile organic compounds (VOCs). It is the VOCs that are critical as they increase when we begin to develop certain conditions. Initial studies found that VOCs in exhaled breath can indicate different types of tumour and tumours at different stages.

Hearing

The idea of a hearing aid for those with hearing problems has been around for more than 300 years, starting with the ear trumpet. However, advances in technology continue to change what is possible. Hearing loss can involve a loss of hearing over specific sound frequencies and technology now allows some hearing aids to amplify sounds only within specific frequency bands. Some hearing aids can automatically adjust to certain sound environments which have been pre-programmed by the user. Other hearing aids now have directional microphone systems to boost sounds coming from the front of the wearer and reduce sounds coming from other directions. This improves the understanding of speech when there is background noise. Other features include digital noise reduction, which makes the background or environmental noise less annoying. Similar in purpose to digital noise reduction, impulse noise reduction also improves listeners' comfort. This system detects any transient loud noises, such as dishes rattling, and softens them instantly. Finally, although fairly specific in its application, wind noise reduction can make a huge difference to people involved in outdoor activities. Wind noise reduction detects the impact of the wind blowing across the hearing aid's microphones and stops or reduces its amplification.

KNOWLEDGE AND POLITICS

> Political power intoxicates the best hearts. No man is wise enough, nor good enough, to be trusted with much political power.
>
> (Hans F Sennholz, economist)

As the quote suggests, politics and power are closely associated and a lot of discussions based around politics have a strong link to power. This theme will allow you to consider the representations of government politics you meet in your everyday lives, how you interact with that politics through technology and how you feel about politics. The theme also looks at politics through a wider lens, discussing the idea of who controls knowledge and what they do to try to gain control—this is the idea that knowledge itself is a political tool as opposed to the knowledge of politics. This also leads into discussions about manipulation of knowledge and the role of propaganda.

THINKING POINT

What are the ethical obligations when knowledge is transferred between political groups?

Find a list of organizations based in your country that help others in the world or are helped by others. These could be government organizations, non-governmental organizations (NGOs), charities or businesses. Very often they are organized on community, national and international levels to serve a social or political goal such as humanitarian causes or the environment. From the list choose one organization and do some research to find the answers to the following questions.

- What does the organization aim to do?
- Where does its funding come from?
- Who does the organization advise?
- Who advises the organization?
- Would you consider the organization to have power or be subject to inequities of power?
- Does the organization have local or global reach?

Discussion

You will now consider two different scenarios.

Volunteer work overseas

There are many organizations that offer volunteer programmes and a lot of these are NGOs. This is where people volunteer to work, usually within the developing world, and become associated with a particular community for a particular time period. This work is usually advertised as making a real and meaningful contribution to the world. The time period involved can be as little as a few weeks up to a number of years. Volunteer work is available to a wide age range, but is probably most often undertaken by those in the age range 18–30. Usually the volunteer pays a fee to the NGO for arranging the trip and in many cases pays for flights.

A range of volunteer jobs are available. If someone is already trained in a skill in their home country, for example as a doctor, nurse, dentist or teacher, they may work with that skill. If you are not already trained in a specific skill, you will still be able to help others. The idea is that you will have a positive impact on people, community and environment.

A few examples are volunteering in teaching, conservation work, empowering women, promoting green energy or working with children with special needs. For the longer periods of volunteering there would be an expectation that you would immerse yourself in the language and in the culture; for shorter trips it would be about having an experience. There is often a possibility for further travel within the country once you have been volunteering there for the specified length of time. Sometimes the countries involved struggle with poverty and disease, so volunteering is often advertised as making a real difference to a community in desperate need. In the ideal case, this represents one community sharing with another community to the benefit of both and upholding ethical obligations.

A version of this you might be familiar with is CAS trips. These take students to communities that are likely to be outside of the students' own experiences and allow students to understand and learn about those communities while providing some sort of service. Very often these are arranged by or in conjunction with an NGO.

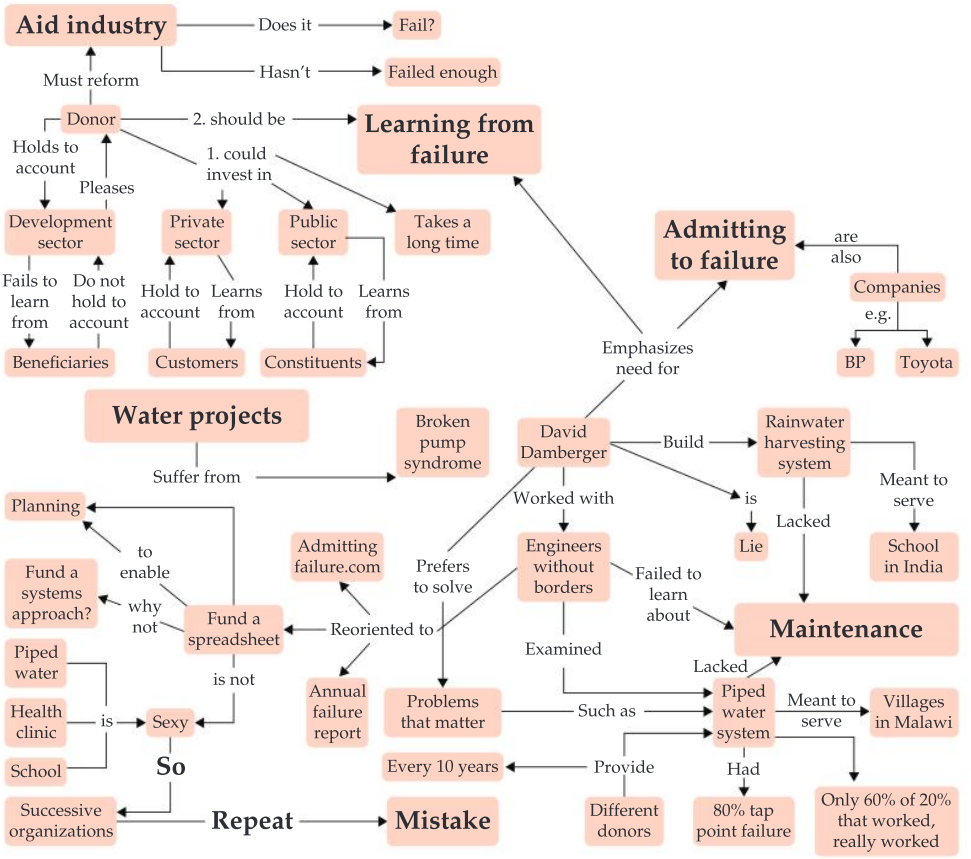
When these work well they can be highly rewarding personal experiences, but looking through a TOK lens there are questions to ask, including the following.

- What knowledge does the community of volunteers gain from the experience?
- What knowledge does the community being helped gain from the experience?
- Is it equal on both sides or is there some form of power inequity?
- How do you ensure that this is not a situation of knowledge imposition?
- To what extent are ethical obligations weakened by power inequity?

Aid

The business of aid or the aid industry, where wealthier countries provide money and resources to support programmes to help less economically developed countries, is well known and well documented. As Figure 3.9 suggests the aid industry faces a number of challenges. The extracts that follow represent two sides of the argument about the provision of aid.

▼ **Figure 3.9** The aid industry



Here is what the UK government said in 2020 about its aid provision.

> The UK government remains a world leading aid donor spending 0.5% of our national income. We will spend more than £10 billion next year to fight poverty, tackle climate change and improve global health.
>
> We will do aid better across government, even if the budget is smaller, to deliver maximum impact for every pound we spend.
>
> We will combine aid with diplomacy, focusing our efforts where the UK can make a world-leading difference ensuring the UK is a force for good across the globe.
>
> …
>
> [Below are the] 7 global challenges where it can make the most difference:
>
> - climate change and biodiversity: a greener and cleaner path to growth in developing countries
> - COVID and global health security: combat COVID-19 and support healthier and more resilient populations in developing countries
> - girls' education: a global commitment to get 40 million girls into education and 20 million more girls reading by the age of 10
> - science, research, technology: deliver cutting edge technology and research-led solutions in health, education, resilience, low carbon technologies, agriculture and economic development, conflict and poverty
> - open societies and conflict resolution: strengthen democratic institutions, human rights, free media and effective governance

- humanitarian preparedness and response: lead stronger collective international response to crises and famine
- trade and economic development: build trading and investment partners of the future.

We will prioritise what we spend aid on and where we spend it. Spending will also be subject to a new and rigorous performance assessment."

(www.gov.uk/government/news/changes-to-the-uks-aid-budget-in-the-spending-review)

The extract from a working document for the United Nations University below offers a different perspective on aid provision.

"Historically nations have developed at their own pace without assistance or aid. This kind of self-development has its obvious upsides, namely in guaranteeing the "ownership" of countries over their development process. None the less, due to the human cost this route would entail for developing countries today, it is impossible to advocate that they should take this slower route to prosperity. How to manage the "second best solution" to development, foreign aid, is the topic of the UNU-WIDER working paper "Aid as a Second-Best Solution: Seven Problems of Effectiveness and How to Tackle Them" by Richard Manning, in which he sets out seven problems to aid effectiveness today, and how these could be solved.

1. Aid can be inefficient. The channels of aid delivery built by donors are not free of inefficiencies and fragmentation by any means.
2. Recipient countries may become dependent on aid. This can lead to the pushing up of exchange rates and can thus stunt the development of the tradables sector. Over-dependence on aid may also allow donors inappropriate leverage over national policy and diminish national governments efforts to raise revenue independently.
3. The private sector might be crowded out through government-to-government aid; this might also lead to the state taking more responsibilities than it can effectively manage. The key issue here is whether aid encourages governments to play a larger role in service delivery than is effective when compared to delivery by agents outside the public sector. More work needs to be done to ascertain whether the current proportion of aid that goes to the state rather than NGOs is optimal.
4. Aid can weaken local accountability through strengthening the executive at the expense of other political forces. Aid channelled directly to governments raises their capacity relative to parliaments, civil society and the media.
5. Government spending in all countries is open to malpractice and inefficiency; this is particularly the case in countries with weak institutions. Accountability to donors can trump accountability to stakeholders.
6. Donors have mixed motivations for providing aid. These include political influence, cultural promotion and commercial self-interest. These mixed motives can affect the development value of aid spending: and
7. Aid can be used by donors as an excuse not to take action in other policy areas where reforms may be politically costly in domestic terms but more effective than aid in terms of spurring the development of recipient countries."

(http://www1.wider.unu.edu/article/second-best-solution-seven-problems-aid-effectiveness)

There is no doubt that good does come from aid initiatives. Ethical obligations such as ensuring that both sides have an equal voice and the reasons for undertaking any work are ethical clearly hold in successful cases. However, with a little research you can find the stories where aid has gone seriously wrong, resulting in something worse

than the original situation for the recipient and a lot of wasted money and a tarnished reputation for the donor. This is a rich area for TOK.

THINKING POINT

How might emotive language and faulty reasoning be used in politics to persuade and manipulate?

How do you know when you are being deceived? Many people are sceptical when it comes to things such as advertisements that look too good to be true, or when they are promised all forms of benefits if they vote a particular government into power. There are a number of reasons you may become sceptical.

- You realize that what is said is not true and is unlikely to be true on the evidence you have.
- Defences are built around what is said.
- The argument put forward is logically unsound.

Spend a little time thinking of examples of each of the above and think about what you need to do to ensure that you are aware of them and are not misled.

Discussion

You will now consider one case of each of the above situations.

Situation 1

"Truth it's the new hate speech"

Over the years politicians have told partial truths, politicians have embellished truth and politicians have told outright lies. Some do more than others and to differing degrees. However, in some cases this seems to have little impact on their popularity. Here are a few suggestions why.

People sometimes make a distinction between an understanding of honesty and the notion of authenticity. If they believe the politician is authentic then they may ignore the factual accuracy. This is outlined in the following report of recent research from the USA.

> "Research led by Oliver Hahl of Carnegie Mellon University has identified the specific circumstances in which people accept politicians who lie. It is only when people feel disenfranchised and excluded from a political system it may be more likely that they will accept lies from a politician who claims to be a champion of the "people" against the "establishment" or "elite". Under those specific circumstances, flagrant violations of behaviour that is championed by this elite—such as honesty or fairness—can become a signal that a politician is an authentic champion of the "people" against the "establishment".
>
> [In the case of politicians] … who explicitly pit a mythical people against an equally mythical elite, the disregard for facts increases their authenticity in the eyes of supporters."
>
> *(Lewandowsky 2017)*

There are potential differences in systems where voters are required to vote by law and it is therefore compulsory. In this situation it is suggested that those voting are less tolerant of being given incorrect facts and that politicians are more likely to be honest.

Situation 2

Fogelin and Sinnott-Armstrong explain their views on how arguments are built in their book *Understanding Arguments: An Introduction to Informal Logic*. The following extract summarizes their position.

When building an argument, ideally you want people to accept the argument and not just demand more reasons. There are three strategies that can help with this.

i. Using assuring terms. This is where you indicate there are back-up reasons even though these are not given right now. One way this is done is by citing authorities without being specific. Examples of this include:

Doctors agree …

Recent studies have shown …

A reliable source close to the government says …

It has long been established that …

Another way to give assurances is to comment on the strength of our own belief. In this case you conversationally imply why you feel so sure. Examples of this would include:

I am certain that …

I am sure that …

I can assure you that …

Over the years, I have become more and more convinced that …

The third kind of assurance "insults" the audience. These assurances do not give specific reasons but also suggest there is something wrong with you if you do ask for a reason. Examples of this would include:

Everyone with any sense agrees that …

Of course, no one will deny that …

It is just common sense that …

There is obviously no question that …

Nobody but a fool would deny that …

ii. Using guarding terms. In this case the argument is defended by making the case less strong. These fit into three broad categories:

Weakening the extent of what has been said; retreating from "all" to "most" to "a few" to "some" and so on.

Using probability phrases like "it is virtually certain that …" "it is likely that …" "it is arguable that …"

iii. Using discounting terms. This is where you cite a possible criticism in order to reject it or counter it. This is often signed by using a "discounting connective". Discounting connectives include the following words:

though	even if	but
still	however	nevertheless
yet	nonetheless	

Examples of this would include:

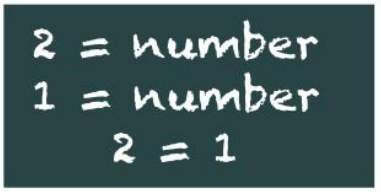
Jones is an aggressive player; however, he is not dirty.

The situation is difficult, yet there is still hope.

The Democrats have the upper hand in Congress, even if only for the time being.

A truce has been declared but who knows for how long.

(Fogelin, Sinnott-Armstrong 1978)



Situation 3

Where the argument put forward sounds fine but is actually logically incorrect, the technical term is that there is a logical fallacy in the argument. There are many types of logical fallacy and the scope for exploring them goes far beyond this book. However, here are a few to watch out for, with examples.

- **Argument from ignorance** is whenever it is argued that a proposition is not true simply on the basis that it has not been proved false, or that it is false because it has not been proved true.
    - "The protestors have not succeeded in proving that radioactive fallout is dangerously harmful to human life. Therefore, it is perfectly safe to continue our programme of testing nuclear weapons."
- **Circular argument** is when a person assumes that the premise for an argument is the very conclusion the person is trying to prove. When you encounter a circular argument, you may feel that the writer is simply saying the same thing over and over, or not providing any proof for their point.
    - "François Truffaut is the world's greatest film director because people with good taste in film prefer his movies to anyone else's. People with good taste in film can be recognized by the fact that they prefer Truffaut's movies."
- **Black or white argument** or **false dilemma** occurs when the issue at hand is inappropriately defined as either one extreme or the other.
    - "While rallying support for his plan to fundamentally undermine citizens' rights, the president told the people they were either on his side, or they were on the side of the enemy."
- **Complex question:** a complex question is one that cannot be reasonably answered with a simple "yes" or "no" because there is more than one issue involved (as in the first example below), or it is a question that you cannot answer without accepting certain assumptions that are built into the question itself (as in the second example below). Therefore, a complex question is a manipulative way of trying to persuade someone of something.
    - "Don't you want to be rich and happy?" (Perhaps I want to be happy, but not rich.)
    - "Why is capitalism so much more efficient than communism?" (What if I don't believe that capitalism is more efficient that communism?)
- **False cause** involves being mistaken about the real cause of an effect or event, sometimes simply because one event occurred before another one.
    - "Women nowadays are having fewer children than they did 100 years ago. Therefore, modern women are less fertile than their grandmothers and great-grandmothers were."

These sorts of fallacy are commonly used whenever someone is trying to persuade us to take a specific position.

CONNECTIONS ACROSS THE COURSE—KNOWLEDGE AND THE KNOWER

You have worked now though the different optional themes and reflected on the idea of the influence of religion, indigenous societies, language, technology and politics on knowledge in general. At the same time you might have been thinking about the idea that part of knowledge is in fact the way the course itself is divided up into the themes and the areas of knowledge. As with all aspects of knowledge, divisions between different characteristics are often not clear-cut and this distinction is no different.

The themes themselves have overlaps. For example, the theme of knowledge and religion might spend some time looking at politics and also consider ideas such as religious language. Similarly, the theme of knowledge and technology might look at the ubiquity of the English language on the internet and how that is linked to the death of languages.

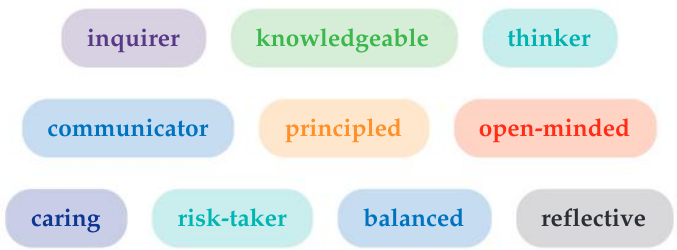
These overlaps extend to the areas of knowledge. Looking at how technology has helped and possibly hindered the pursuit of mathematical knowledge is a perfectly valid and interesting discussion to have in TOK. Equally, the role of religion on knowledge from the arts and the role of language in both producing and acquiring knowledge in history are all perfectly legitimate within the study of TOK.

Now it might be worth thinking about and reflecting on the role of the learner profile. Here are a few examples.

- Given the overlaps just discussed, you could think about the idea of what it might be to be a balanced learner.
- As many people hold particularly strong views on some of the aspects that have been discussed, the idea of being a caring learner might be something for further reflection.
- You could reflect on how much of a risk-taker you have been in terms of embracing and considering different points of view.

Now take a few minutes to reflect on which aspects of the learner profile have been at the forefront as you have worked through this chapter. There is a reminder of the learner profile characteristics below.

Learner profile characteristics



Making these kinds of connections and overlaps between themes and areas of knowledge is a very good way of deepening your understanding, but it is not something you will be required to

demonstrate in the assessment tasks. When we get to the chapters on the two assessment tasks you will see that the exhibition task focuses on the themes, and the essay task is based on the areas of knowledge.

This leads us to the compulsory theme of knowledge and the knower. Although this is designated as a theme, it is a more broad-ranging than the other themes and for this reason it has been left to the end of the chapter. It is different from the other themes, in that it is **expected** that links will be made from it to other themes and areas of knowledge. In this theme the focus is on the knowledge you have, how it is produced and how it is applied.

THINKING POINT 1

What counts as knowledge?

Write down 15 things you know. Try to make these as diverse as possible. Now try and classify them into different groups and think about the rationale for the groups. In how many different ways can you group the things? An initial test to consider whether these things are actually knowledge is to see if a sentence starting "I know" followed by a description of one of the 15 things makes sense to you.

Discussion

You will find that there are several different ways of classifying the knowledge you have. This fits well with one of the main examples for how knowledge can be defined within TOK, which is through the metaphor of a map. The idea is that knowledge gives us a way of navigating the world and to navigate the world you need different maps. Along with the academic knowledge you learn in school and the knowledge you gain from working with each of the optional themes, there are other things that influence what "I know". You might have considered the idea of practical knowledge—this is the idea of "knowing how". This could include any of the sports you play or many of your other hobbies. You will know it fits into this category as it will fit into the sentence "I know how to …". Equally, you might have considered the idea of something that you know but how you know it is less easy to describe. In this case you might start to think about concepts such as empathy, intuition and emotion. You might also know something because some sort of "authority" told you—but you then need to test the reliability of that authority.

THINKING POINT 2

How do I know when to believe what I am being told?

Using a search engine of your choice, search for the following: "unbelievable things that are true". You will not be short of results, but you should now pick five pieces of knowledge that claim to be true. Your job is to decide whether they really are true. List four tests you can apply to help you to decide. Now apply these tests and decide whether there is a rank order for your five items in terms of the security of your belief.

Discussion

Here are three examples.

Example 1

"The shortest commercial flight lasts just 57 seconds."

The claim here is that the shortest commercial flight in the world is between Westray and Papa Westray, which are two islands that make up part of the Orkney Isles off the north coast of Scotland.

How you would convince yourself this is likely to be true?

- Check an authoritative source, for example *Guinness World Records*.
- Check with the original source of information, in this case the airline.
- Check maps to see if it is a claim that fits with what they show.
- Find somebody or a group of people who have taken this flight.

Example 2

"Garfield phones have been washing up on a French Beach."

This claim is the subject of an article by Palko Karasz in the *New York Times* on 29 March 2019. The claim is that since the early 1980s telephones in the shape of the cartoon character Garfield have been washing up on a beach in Brittany in France.

How you would convince yourself this is likely to be true?

- Check whether multiple sources report the same story.
- Check whether there is a possible reason for this happening and then see whether the reason itself can be verified.
- Check whether the cause of the problem makes sense.
- Find somebody or a group of people who have found these phones.

Example 3

"Can openers were invented 48 years after cans."

This claim is the subject an article by Kat Eschner in the *Smithsonian Magazine* on 24 August 2014. The claim is that cans were invented 48 years before anybody invented an easy and reliable way to open them.

How you would convince yourself this is likely to be true?

- Check whether multiple sources report the same story.
- Check whether there is a possible reason for this happening and then see whether the reason itself can be verified.
- Check whether the cause of the problem makes sense.
- Find the patents for the first can openers and the first cans.

To summarize, the following questions prompt some of the tests that can be applied to see whether a story is true.

- Is there reliable evidence backing up the claim?
- Are there multiple sources backing up the claim?
- Is there an explanation for the claim that seems to be logical?
- Are there facts that back up the claim—the existence of artefacts, multiple photographs, diagrams or maps, recorded dates?
- Is there a verified authoritative source that backs up the claim?

THINKING POINT 3

What are the qualities that make fake news believable?

Fake news is a term that has come to prominence in approximately the last 15 years, but in reality it has been around a lot longer than this. Consider the headline and story below.

"In the spring of 1917, as World War One raged across Europe, both the *Times* newspaper and the *Daily Mail* newspaper in London published accounts from 'anonymous sources' that claimed they had visited a 'Kadaver' factory called *Kadaververwertungsanstalt* in Germany. This factory was said to extract glycerine from the corpses of the fallen to make soap and margarine."

"Now, long after the war finished, the story has been attributed to MI7. In the employ of MI7 during the war were 13 officers and 25 paid writers, including Major Hugh Pollard, who spread this false story through the newspapers . . .

This horrific fake news story was only one of thousands reported by both sides during the war. In an example from the German propaganda machine, the French Minister of War reported in 1914 that the Germans in Alsace-Lorraine were publishing news that the French Parliament had voted against the war and that the President of the Republic had been assassinated."

(www.thesocialhistorian.com/fake-news/)

Why might people be convinced that this was true?

Discussion

Fake news comes in a variety of forms and some of it is certainly highly questionable without too much investigation. Consider this headline.

World War 2 Bomber Found on Moon

This was a headline in the UK newspaper the *Sunday Sport* on 24 April 1988. The story is highly questionable before you even begin to think deeply about it. The questions of how a Second World War Bomber made it to the moon, and why, immediately cast doubt on the headline. After a very small amount of research the fact that nobody who studies astronomy has ever suggested such an idea immediately makes its veracity even more problematic. In one sense these sorts of fake news stories are less problematic, as the basis for truth is so easily questioned that you do not take the stories seriously.

However, the example in thinking point 3 is much more credible. In this case you need to apply your TOK thinking in more depth. First, here are some reasons why this report does not sound unlikely.

- Atrocities happen in war and this is another atrocity.
- The country is at war and people want to believe that the enemy does terrible things as this provides a justification for being at war.
- Glycerine comes from bones and is a constituent part of both margarine and soap, so the news article is potentially scientifically factual.
- There is no sensationalist language and there is some detail in the news article, all of which can potentially be verified.

These points suggest that on the surface there is not too much reason to question what is being said. However, if you apply the sorts of questions you considered in the discussion of thinking point 2, then you can see it all becomes rather more problematic.

- The reliable evidence to back up the story is rather limited—it is an anonymous source. Although this is more than a report of the story and there appears to be a little investigation, it becomes obvious that it is a single source. This is one of challenges with knowledge in history. Historians have to check that the reason they are finding matching evidence is not because they are looking at a single source that is disguised as multiple independent sources.
- Although there is a logical explanation for the story, as you have seen there is also a logical explanation for making-up the story.
- Ultimately no credible source is given, no evidence is provided (also remember that photographic evidence, if there were any, has been faked for many years) and multiple authorities do not back up the claim.

THINKING POINT 4

How does our knowledge of significant events of the past shape our perspectives?

This thinking point shows you the direct link between knowledge and the knower and one of the areas of knowledge—history.

Ask an older person, such as a parent or grandparent, about the most historically significant or memorable event he or she can remember.

Record what the person remembers. You can take notes or make an audio or video recording.

Do some background research about the event using one other source and one interpretation.

Write a brief historical account of the event.

Discussion

One of the things that will need to be considered here is what the person decides is a relevant event. On a day-to-day basis what happens to most of us is not going to be considered by historians. Who your friends are, your favourite sport and how well you do at school are of interest to you and the people around you, but to the wider population they are unimportant. For the majority of you that is the way it will stay during your life. If you become famous, then this might change—you will only know as time passes.

What is interesting is that there are events that, as soon as they have happened, you know will be significant and will become a part of written history. These are often characterized by the fact that they have some sort of effect on a large part of the world and people

can remember what they were doing when they first heard about them. Events that fit this description include the assassination of John F Kennedy (JFK), President of the USA on 22 November 1963; the first moon landing on 20 July 1969; the fall of the Berlin Wall on 9 November 1989; the destruction of the World Trade Center in New York on 11 September 2001(now best known as the events of 9/11). These events in certain ways shape who we are.

The events of 9/11 are clearly memorable for many people and it was the first time that a terrorist attack was captured in such detail by the media. This included the last phone calls from people on the planes that crashed into the World Trade Center, the television footage of the planes crashing, through to the minute-by-minute footage of what was happening on the ground. This was broadcast around the world and it was an event that left an indelible image in the minds of everyone who watched. It changed the way many people looked at the world, it challenged the sense of safety in your home country and it changed the way people thought about flying.

The fall of the Berlin Wall was a rather different event in that the event running up to it although reported did not really impact many people's conscience. Events in Poland and Hungary earlier in 1989 were an indication that things in Eastern Europe were changing at speed, and this followed a number of other changes earlier in the 1980s. Nevertheless, when the East German Government announced that East German citizens could freely visit West Germany on 9 November 1989, even though this followed a number of weeks of civil unrest, it was not expected. What followed clearly had a profound effect on those who lived in both East and West Germany at the time, but was also felt around the world. This was a time when things were changing through largely peaceful protest—the name "the Velvet Revolution" for the protest that took place in the Czech Republic earlier that year is a signifier of the fact that this was not a violent or brutal change.

The first moon landing in July 1969 was another event that affected many. The idea that technology had developed to the extent that this was possible was something that amazed many. The fact that many could watch it on television in their own homes was also something memorable—only in the 1960s had television became affordable for many. It also brought great hope to people that all of this technology could be used for good rather than war—1969 was the height of the Cold War and the height of the Vietnam War.

The shooting of JFK was felt most keenly in the USA where he was a popular president who was somewhat different from his predecessors. However, his death was a major news story around the world and in certain ways was one of the first worldwide media events. Along with Pierre Trudeau in Canada and Harold Wilson in the UK, JFK had given people the feeling that there was change in those in power and the world was becoming a more egalitarian place. The shooting made people stop and think.

To complete this, you can consider a possibly less-remembered event, the death of the musician John Lennon on 8 December 1980. This highlights that sometimes it is the local significance that is important rather than the global. Most people know that John Lennon was assassinated in New York in 1980, but probably do not know the exact date and do not have particularly vivid memories of it. However, in Liverpool in the UK, where John Lennon had grown up and found fame as part of the 1960s band

the Beatles, it was a very sad day. He was seen as a success story from Liverpool and some people felt that with his death some of that success had been taken away. At that point the city of Liverpool was suffering economically with poverty and high unemployment; the death of John Lennon became a symbol for those difficult times.

SUMMARY

This chapter has focused on some of the important qualities and aspects of the themes. It has given you the opportunity to practise some of the thinking necessary for successful students of TOK, as well as helping you to navigate the real world successfully. Using this chapter in combination with Chapter 2, you are now set up to consider the two assessment tasks.

4 GETTING STARTED ON THE TOK ESSAY

In this chapter you will:

- ✔ begin by looking at an overview of the essay
- ✔ consider the main points that should be noted from the prescribed title list that you are given
- ✔ think about how you will be marked on the essay
- ✔ consider what you can learn from the marking instrument about how the essay should be written
- ✔ consider seven different aspects of the essay that will need some thought before you start writing it. These are:
  - links to areas of knowledge
  - key words or concepts
  - the overall discussion
  - arguments
  - examples
  - points of view
  - implications.

INTRODUCTION

This is the first of three chapters that will take you through the essay-writing process. These chapters are aligned to the three meetings you are required to have with your teacher, which you then need to summarize on the Planning and Progress Form (PPF).

OVERVIEW

You will receive the essay titles in year 2 of the course and you will be given 10 hours of the course to undertake some work on the essay. It is also likely that you will need to spend some time outside class to ensure that you have the best version possible. The essay titles will look like the set shown in Figure 4.1.

Theory of knowledge prescribed titles

Specimen

Instructions to candidates

- Your theory of knowledge essay must be written on **one of the six essay titles** (questions) provided [below]. These essay titles take the form of knowledge questions that are focused on the areas of knowledge. You may choose any of the titles but are recommended to make your choice in consultation with your teacher
- Your essay will be marked according to the marking instrument in the theory of knowledge guide. Examiners will be looking to see that you have provided a clear, coherent and critical exploration of your chosen title
- Examiners will mark your essay against the title as set. It is very important that you respond to the title exactly as given and do not alter the title in any way. Please note that any quotations that appear in the titles are not necessarily authentic. They will present a real point of view but may not be direct quotations
- Your theory of knowledge essay must be submitted to your teacher for authentication. **Any external sources used must be acknowledged** and should be cited according to a recognized convention
- Your theory of knowledge essay should be written in a standard size 12 font and be double spaced. It must be a maximum of **1600 words**.

---

1. How important are the opinions of experts in the search for knowledge? Answer with reference to the arts and **one** other area of knowledge.
2. Is the division of the natural sciences and mathematics into separate areas of knowledge artificial?
3. When historians and natural scientists say that they have explained something, are they using the word "explain" in the same way?
4. Are there fewer ethical considerations on the pursuit of knowledge in the arts than in the human sciences?
5. How do our expectations impact our interpretations? Discuss with reference to history and one other area of knowledge.
6. To what extent do you agree with the claim that "knowledge is of no value unless you put it into practice" (Anton Chekhov)? Answer with reference to two areas of knowledge.

▲ **Figure 4.1**

There are a few things you should note about Figure 4.1.

- There are six titles here and there will always be six titles. This does not mean that you will feel equally attracted to all of them and in fact some titles might look a little intimidating at first. Do not worry about this as you only need to be able to answer one of them. These titles are designed to cover a wide range of ideas and the course you have been taught in school cannot cover everything.

- All six titles ask you to refer to two areas of knowledge. This means that your essay must be focused on these two areas. You can mention the themes within the areas of knowledge but any reference to the themes must be relevant to and part of the area of knowledge. You will have a chance to work with the themes in the internal assessment piece, the exhibition. If you look at the titles a little more closely you will see there are three different formats.
    - The title mentions two specific areas of knowledge. Titles 2, 3 and 4 are all examples of this. In this style of essay the decision on which areas of knowledge to use is already made and you need to be comfortable and willing to work with those two areas of knowledge.
    - The title mentions a specific area of knowledge and then leaves you as the writer with the decision on the second area. You need to be comfortable with the area designated and also able to find another area that works well for you in the context of the title.
    - The title just requires you to answer with "reference to two areas of knowledge". In this case you have free choice and you need to find two areas of knowledge that fit well with your understanding of the title and of which you have a reasonable understanding.
- You are told not to change the title. Make sure you follow this instruction. If you do not like one of the areas of knowledge specified you cannot change it; if you think the title should have a different focus you cannot change the focus. If you have those sorts of doubts about the title, then it is probably best to consider a different one.
- You are told to acknowledge external sources. The IB takes academic honesty very seriously and if you have used external sources or referred to something that is not common knowledge you need to acknowledge this. You do this by using citations and then there will need to be a bibliography of references at the end of the essay. For TOK, the IB is not worried about the style of citation, but you should use a recognizable style. If you need further guidance then please ask your teacher or the school's librarian.
- The notes say that your teacher will authenticate that the essay is your own work. To help your teacher to do this, you will have three meetings with them—an initial meeting providing some form of overview, a second meeting around the planning stage and a third meeting after you have submitted a draft of the essay. You will need to reflect on each of those three meetings and you will need to summarize those reflections on the Planning and Progress Form (PPF). The purpose of the form is to ensure that you gain some support from your teacher and it would be looked at again if there were any questions raised about the academic honesty of the work. You do not need to worry about what the examiner will think of the form—the examiner will not see it.
- The notes say to write in font size 12 and double spaced. Ensure that you do this, to show consideration for your examiner's eyesight. Also use a font that is easy to read (Times New Roman, Arial or Calibri, for example). Remember that examiners usually mark more than 100 essays in a short period of time.

- The instructions say to write a maximum of 1600 words. The IB means this! The examiner is instructed not to read any more than 1600 words. This means that if you go over the word count, the examiner will give you a mark when they have not read some paragraphs or your conclusion. The word count does not include figures and diagrams, in-text citation, bibliography or a title page. There is no minimum word count, but very short essays will by definition lack depth and score low marks.

HOW YOU WILL BE MARKED

Before you start the planning of the essay it is important to be clear on how you will be marked. You are marked against a series of descriptions using what is called global impression marking. A copy of the descriptors is shown in Table 4.1.

Does the student provide a clear, coherent and critical exploration of the essay title?					
Excellent 9–10	**Good 7–8**	**Satisfactory 5–6**	**Basic 3–4**	**Rudimentary 1–2**	**0**
The discussion has a sustained focus on the title and is linked effectively to areas of knowledge. Arguments are clear, coherent and effectively supported by specific examples. The implications of arguments are considered. There is clear awareness and evaluation of different points of view.	The discussion is focused on the title and is linked effectively to areas of knowledge. Arguments are clear, coherent and supported by examples. There is awareness and some evaluation of different points of view.	The discussion is focused on the title and is developed with some links to areas of knowledge. Arguments are offered and are supported by examples. There is some awareness of different points of view.	The discussion is connected to the title and makes superficial or limited links to areas of knowledge. The discussion is largely descriptive. Limited arguments are offered but they are unclear and are not supported by effective examples.	The discussion is weakly connected to the title. While there may be links to the areas of knowledge, any relevant points are descriptive or consist only of unsupported assertions.	The discussion does not reach the standard described by the other levels or is not a response to one of the prescribed titles for the correct assessment session.
Possible characteristics					
Insightful Convincing Accomplished Lucid	Pertinent Relevant Analytical Organized	Acceptable Mainstream Adequate Competent	Underdeveloped Basic Superficial Limited	Ineffective Descriptive Incoherent Formless	

▲ Table 4.1

Below is the central question that the examiner is going to ask about your essay.

Do you provide a clear, coherent and critical exploration of the essay title?

The examiner will decide which of the levels (excellent, good, satisfactory, basic, rudimentary) is the best fit for your essay and will then fine-tune this to decide how well your essay fits in the level.

So, how does the fine-tuning work? There are two ways examiners look at this.

If your essay is a good fit with the level descriptor then you will be awarded the higher mark, but if the level descriptor is the best fit, but not a perfect fit and there are gaps then it is likely you will be awarded the lower mark.

The examiner will read the essay, decide on the level and then ask: is it closer to the description in the level above or to the level below? If it is closer to the level below then the mark will be the lower. If it is closer to the level above then it will gain the higher mark.

Do not worry about the possible characteristics in Table 4.1 as these are used by examiners to help with the decision-making.

THINKING POINT

You should now spend some time carefully reading the descriptors and analysing the key attributes.

Discussion

There are many ways in which the descriptors can be analysed. An example is given below.

Excellent 9–10	Good 7–8	Satisfactory 5–6	Basic 3–4	Rudimentary 1–2	0
The discussion has a sustained focus on the title and is linked effectively to areas of knowledge. Arguments are clear, coherent and effectively supported by specific examples. The implications of arguments are considered. There is clear awareness and evaluation of different points of view.	The discussion is focused on the title and is linked effectively to areas of knowledge. Arguments are clear, coherent and supported by examples. There is awareness and some evaluation of different points of view.	The discussion is focused on the title and is developed with some links to areas of knowledge. Arguments are offered and are supported by examples. There is some awareness of different points of view.	The discussion is connected to the title and makes superficial or limited links to areas of knowledge. The discussion is largely descriptive. Limited arguments are offered but they are unclear and are not supported by effective examples.	The discussion is weakly connected to the title. While there may be links to the areas of knowledge, any relevant points are descriptive or consist only of unsupported assertions.	The discussion does not reach the standard described by the other levels or is not a response to one of the prescribed titles for the correct examination session.

▲ Table 4.2

The colour-coding of the marking instrument shown in Table 4.2 is to help you to understand the key ideas against which you are assessed. It is not the way examiners mark—they are looking for the best overall fit, not trying to assess different strands and then come to some form of average. As you can see from the different colours in Table 4.2, there are a number of different areas about which you need to think very carefully. These include:

- the overall discussion
- links to areas of knowledge
- arguments
- examples
- points of view
- implications.

There is one other thing that you need to consider when initially engaging with the essay. This is the concept of key words.

MAIN CONSIDERATIONS

Below we examine in detail the main considerations when thinking about your essay. To do this we will focus on the following essay title.

"To what extent is doubt the only key to knowledge?" (adapted from a Persian Proverb). Discuss this with reference to two areas of knowledge.

This is a modification of an actual past essay title, but it fits very well with the style of title with which you will be working.

At the initial stage you should just be aware of how the process needs to work in a general sense and this will take you through the initial planning phase. This phase is aligned to your first meeting with your teacher, which you will summarize on the PPF. The aim is to ensure that you have a solid idea of the things you want to say before you start the detailed planning, which will be the next stage. You will work through the process in an order that could be used when thinking about the title. However, do not think of this as a linear process; it is highly likely that you will come back and revisit things or possibly move ahead. That is not a problem, but each section here should give you some ideas on what to think about. You will see more in-depth examples of different facets of the essay, including whole essays, in the coming chapters.

Links to areas of knowledge

If your title specifies the two areas of knowledge to use for your essay then you have no choice on this. However, if one area is given and not the other one, or if neither are given, then you need to decide on the specific areas with which to work. How might you do this?

Choosing an area of knowledge

When you need to choose an area of knowledge the first question to ask is: which areas of knowledge do you know the most about and find the most interesting? There may be a link here to the subjects you are studying at higher level. The TOK essay is not meant to be a research paper and it is asking you to apply TOK skills to ideas and concepts of which you already have an understanding. You can still do some research to clarify specific ideas, but if you find you need to do general research on an area of knowledge, or a lot of research early on in the process, then this area may not be a good choice for you.

You need to think about how the two areas fit together. There are no rules about what is and is not allowed; it is about what fits best in the circumstances. Some students choose two areas where there is the potential for quite a lot of contrast—for example mathematics and the arts. This gives you plenty of scope to look at different aspects of each area and allows you to show those differences quite clearly. Finding

similarities might be a little more challenging, but no matter the area of knowledge there will usually be some. This style of essay often leads to quite broad distinctions being made. Alternatively, you could choose two areas of knowledge that potentially fit much closer together—for example natural sciences and the human sciences. Here the distinctions will be much finer and it is possible that there will be more similarities. As long as your essay explores and analyses, it does not matter which approach you take. In one sense the former is a "big picture" essay and the latter is a "detailed part of the picture" essay. The question you have to answer is: which one do you want to write?

THINKING POINT

For the essay title "To what extent is doubt the only key to knowledge?", think about which areas of knowledge you would want to write about and in what combination. Try to come up with at least two different scenarios.

As you choose an area of knowledge, remember not to confuse it with a discipline. Disciplines are subjects such as biology and chemistry, whereas the area of knowledge connected to these disciplines is the natural sciences. Thus disciplines are often subsets of the areas of knowledge. You can certainly use a discipline to highlight a point about an area of knowledge, but if you were to refer to two disciplines in your essay as opposed to two areas of knowledge, this would be problematic. This is true for natural sciences, human sciences and the arts.

Key words or concepts

Thinking about key words or concepts should be done almost at the same time as thinking about the areas of knowledge. Very broadly, the key concepts are the words in a title that you need to spend time explaining, exploring and analysing in the essay.

Note: the word *knowledge* is a concept that needs to be considered in every single title, so that will be assumed.

In this essay *doubt* is clearly a key word as it has the qualities of being a TOK concept, which we discussed in detail in earlier chapters. However, this is not the only key concept and one way of finding others is to ask the question: what is *doubt* (the initial concept identified) meant to be doing? In this case the answer is that it is a key and therefore *key* is also a key concept.

However, key words of another form are important. This applies when the question contains an absolute—a term such as *always, never, requires, must, best, essential* and *only*. This provides you as the writer with a clear and absolute statement with which you can agree, but also gives you lots of shades of disagreement. In the title about doubt, *only* is that word. It suggests that only doubt produces knowledge, nothing else. This gives you something very concrete to argue against at the point at which you wish to do that.

THINKING POINT

For the essay title "To what extent is doubt the only key to knowledge?", think about how you would work with the concepts of *doubt* and *key* in the different areas of knowledge. There is no problem in suggesting that although there are similarities, there are also differences. How doubt is defined and how it is used in the different areas may not be identical. It will also depend on which combination of areas of knowledge you choose. Try to come up with at least two ways in which you could unpack these key concepts and then reflect on how the concept is affected by the key word *only*.

The overall discussion

Earlier it was pointed out that you must not directly change a title. You should also be aware of changing a title indirectly. This is the case where you do not change the words of the title, but your essay is actually answering a different title. There are two ways this can occur.

Firstly, there is a danger that you decide to look at an alternative synonym for a specific concept that is within the title and this becomes the singular meaning for the concept. You are encouraged to unpack all the major concepts, but that means you take a range of views of what the concept entails, not allocate a single "other concept" to it.

Secondly, do not discount the title. This is where you discuss the title in a paragraph, then say it is not really about this but about something else, then spend the majority of the essay discussing the something else. This is potentially a problem in the example essay on doubt. The way it could happen is to take a fairly extreme stance that suggests, for example, doubt is not the only key to knowledge, but it is actually evidence. Here a situation potentially arises where the concept of doubt is effectively discounted early on in the essay; the point of view that it is in fact evidence that is the only key to knowledge becomes the central theme of the essay instead. In this case maybe 1400 out of the 1600 words are in danger of becoming a very large counterexample, so large that in effect it becomes the essay itself. Remember that your overall discussion must link to the title. One way to ensure that this happens is to use the key words regularly in different paragraphs and take care that the way you have defined the key concepts under discussion fits with the title.

One of the aspects of writing the TOK essay that you might find challenging is to ensure that there is a structure or format to the overall discussion. It is in this overall discussion where you show your understanding of the title, the areas of knowledge and how they link together. This is where you have a good opportunity to show the examiner that you understand TOK. Irrespective of your writing style or whether you are writing in your first language or one of multiple languages, the essay should have a structure. A good way to do this is to use a stance or thesis statement.

What is a stance or thesis statement?

For the essay title: "To what extent is doubt the only key to knowledge?" here are a few ideas.

A. You agree with the question that doubt is the only key to knowledge in both areas, although there may be subtle differences in how it applies.

B. You suggest that doubt is a key to knowledge, but that it is more important in one area than the other and that there is a point of view to suggest certain other things are important. Consequently it is a key, but not the only key.

C. You take the position that doubt is a key to knowledge, but other concepts need to be considered.

D. You suggest doubt is not really the key to knowledge and it is focused on other concepts.

In situations C and D you need to be very careful not to discount the title and spend most of the essay discussing other concepts than doubt. In situation D the focus would have to be on the problems of doubt.

How do I use the stance or thesis statement?

There are a number of different possibilities for how it could be used.

- It is quite common for the stance or thesis statement to be used as part of the introduction. In this case you are clearly and definitely setting out the direction of your essay and where it is heading. You may come back to the title in the conclusion and provide a reflection on taking the stance.
- You can use the stance or thesis statement as part of your conclusion. In this case the essay is constructed in such a way that you know each paragraph has to lead towards a known end point.
- You can set up quite a general stance in the introduction and then the essay is spent working from that start point to a slightly different end point. In this case it is likely there will be a slight change in the stance or thesis statement from beginning to end.

In all cases the stance or thesis statement places a structure on the essay, which should make it easier to write and easier to follow. As the nature of TOK is abstract, using a stance or thesis statement helps to ensure that you use meaningful definitions and your arguments do not become too vague. Ralph Waldo Emerson, the 19th-century essayist, philosopher and poet said: "Life is a journey, not a destination". This idea could also be used in a TOK essay where you need to take readers on a journey as they read the essay. However, it is suggested that there is some form of destination in the conclusion. For example, a phrase to describe the writing of a TOK essay could be: "the writing of a TOK essay is about taking the reader on a journey from A to B". The stance or thesis statement potentially provides a start point, the route for the journey and an indication of the destination. This should give a structure to your overall discussion. It is within this overall discussion that you will formulate your arguments, provide your examples and reflect on your implications. It should also help you when it comes to the planning stage.

THINKING POINT

For the essay title "To what extent is doubt the only key to knowledge?", think about what your stance or thesis statement would be. This will obviously depend on the areas of knowledge chosen. You should also decide on how you would use your stance or thesis statement. Finally, think about some of the main points you would want to raise and in what order you would want to raise them.

Arguments

The major question to answer here is: does my essay provide some sort of analysis of the title or is it solely describing my opinion on the title?

If your essay is best described as "this is what I think of the title", then it is likely that your essay is descriptive and lacks arguments. Providing reasons and examples will help but even this will not necessarily stop it from being descriptive. Presenting an argument relates to how those reasons and examples are used in terms of detail

and of ensuring that they directly address the title and the points you wish to make. Ultimately, the majority of claims can be contested on some level; in the TOK essay you are marked on the quality of argument you use to back up your claim, you are not usually marked on the claim itself—but that does not mean you will be given credit for bogus claims with incorrect justification.

THINKING POINT

For the essay title "To what extent is doubt the only key to knowledge?", a possible paragraph relating to the natural sciences is given here.

> In the natural sciences doubt is clearly the key to knowledge. This is because nothing in the natural sciences is certain and everything can be questioned. For example, if we look at the models for atoms over the last 2,000 years we can see that the model is constantly changing. The only way that this change can have occurred is through the idea that somebody doubted the previous model and therefore came up with a new version.

This would be classified as a descriptive paragraph. Try to rewrite the text as a more analytical response, which would include the use of argument.

Discussion

Below is a possible response to the exercise. You will look at the paragraph in two parts.

Original

> In the natural sciences doubt is clearly the key to knowledge. This is because nothing in the natural sciences is certain and everything can be questioned.

Problem

The student has set out a stance on the title that provides a degree of clarity as to what is being said, but it contains a number of absolute terms for which no justification is provided—*clearly, nothing* and *everything*. There needs to be some sort of argument made for this position. It may be rewritten as follows.

Rewrite

In the natural sciences, one position that can be justified is that doubt is clearly the key to knowledge. This is because although the scientific method provides a high degree of reliability, through continuing research and developments in technology there must be the possibility for knowledge to change.

The absolute has been removed.

The first sentence suggests that the position can be justified. The second sentence provides that justification.

Rewrite

Therefore, when research scientists are attempting to produce new knowledge there will be a positive scepticism in their minds about what went before. This scepticism can be seen as a form of doubt. Although the scientific method demands rigorous testing and valid peer review, absolute certainty in a theoretical sense is difficult to justify and hence there is a role for questioning, which is linked to positive scepticism. One way of exploring this is to consider the role played by doubt in driving these questions.

Words such as *therefore* are indicative of a constructive argument.

This sentence shows that the writer has not forgotten the title.

Although is also a word indicating constructive argument.

This is using the idea of questioning to place a concrete understanding of "positive scepticism".

The final sentence concludes the justification and this is now an obvious point to introduce an example.

Now look at the second part of the paragraph.

Original

For example, if we look at the models for atoms over the last 2,000 years we can see that the models are constantly changing. The only way that this change can have occurred is through the idea that somebody doubted the previous model and thus came up with a new version.

Problem

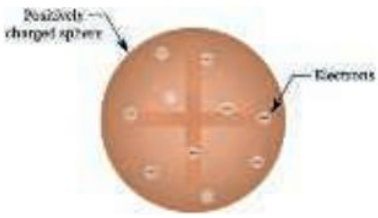
The example here is generic and shows little understanding of the facts. A more detailed example would not only demonstrate a better understanding of the situation, but would also contribute to the analysis of the claim and provide an argument for it. Accordingly, it may be rewritten as follows.

Rewrite

For example, if we consider the change in the model of the atom from what Joseph John Thomson proposed to what Ernest Rutherford discovered, then we can see that part of the motivator behind this could easily be described as doubt. In the late 18th century the electron had been discovered as part of the atom and to explain this, Thomson held that atoms were uniform spheres of positively charged matter in which negatively charged electrons are embedded. This was popularly known as the "plum pudding" model.

Specifics of the argument that will back up the claim are set out.

There is no need for more detail as it is the reason why this model was rejected that becomes important.



▲ Thomson's atomic model, known as the "plum pudding" model

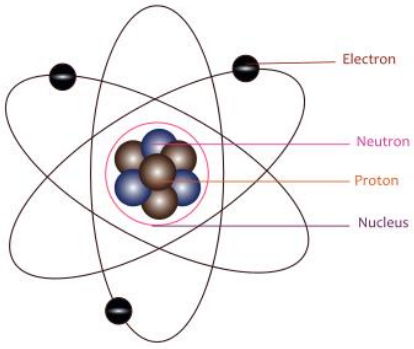
As this was developing science at the time, further research was continuing within the scientific community. As part of this Ernest Marsden, under the guidance of Rutherford, conducted what became known as the gold leaf experiment. Here a series of alpha particles (which have a positive charge) were projected at a sheet of gold leaf. If Thomson's model had been correct then the alpha particles should have all been deflected when they hit the positive charge of the Thomson atom. What happened was that most passed through while some were deflected, suggesting they were interacting with a small positive charge within the atom. Thus the Thomson model did not explain the results and hence came under question. This questioning could best be described as doubt and therefore the challenge was to produce a better model, which both explained the original findings and those found from Marsden's experiment. This became known as the Rutherford model.

Relevant detail is provided.

Thus is often used as a conclusion marker for an argument being presented.

A link is made back to the title.

Therefore is an indicator of constructive argument.



▲ Rutherford's model of the atom

Thus doubt can be seen to play a substantive role in how the models of atoms developed. As further models were developed after this, each was due to the fact that the previous model did not explain everything that was known (there was doubt in the previous model) and therefore a more accurate version was found.

Thus is again used a conclusion marker.

This is an attempt to generalize the argument.

Examples

In the TOK essay one of the ways of clearly highlighting what you are thinking is by providing a specific example to back up your point. Sometimes the example serves as justification for the point being made initially, or it becomes part of the analysis and evaluation of the point. However, you must remember that it is your job to make the point and provide the justification and the evaluation. Simply describing an example does not do that. This section provides you with several viewpoints on examples.

- As was stated earlier, the writing of the TOK essay is not designed as a research project, and the academic subjects you study are a useful source of examples. These are good examples because you have already worked with them and have a good understanding of the subtleties. They include content from lessons, but also experience of writing internal assessment tasks and of writing your extended essay. Using these examples allows you to demonstrate you have personal understanding. Even though this knowledge may not be new to you and you will have good understanding, aspects may well still need references and the main points may need citation. These examples are termed personal academic examples. This gives you a really wide range to choose from—enjoy having that choice.
- Linked to using academic examples, you can use examples from your personal experience. These can be highly effective. For example, considering how you see the world if you speak two or more languages to fluency, and how you switch between languages, could be relevant to a discussion on doubt. However, you should ensure that these examples have a degree of depth to them. Examples that would be considered as trivial by someone not connected to you could include the conversations you have at breakfast and your shopping experiences. Ultimately, this comes back to ensuring that your examples are identifying aspects of knowledge.
- Your TOK course may have provided you with a series of examples. Even when considering these, you need to be careful. There are examples that lend themselves very well to backing up a variety of TOK points and appear in many TOK classes, so they are used in many essays. Examiners do understand that although they may have seen an example before, it may be original for you and therefore it is allowed and can work well. However, there is sometimes a tendency for a student to choose these sorts of examples just because they were in the course and they seem to fit an argument, but without the student showing much understanding. Do not become that student. The list here is by no means exhaustive.

Consider the examples shown in Figures 4.2–4.11.

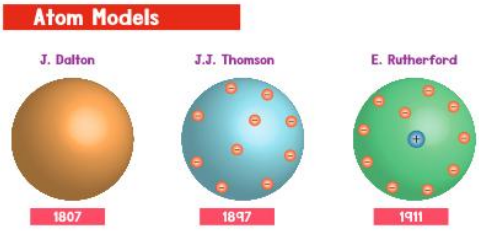
▲ **Figure 4.2** Galileo and heliocentric theory: painting by H J Detouche of Galileo Galilei displaying his telescope

▲ **Figure 4.3** Flat Earth theory

▲ **Figure 4.4** Darwin and the theory of evolution

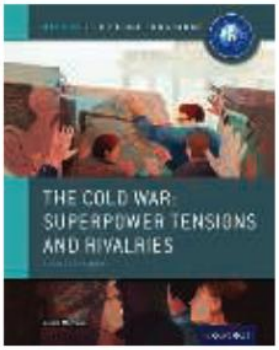
▲ **Figure 4.5** Inuit school children reading aloud in Inuktitut

▲ **Figure 4.6** Serendipitous discovery of penicillin

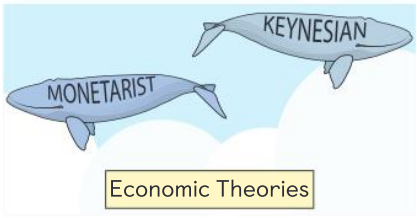


▲ **Figure 4.7** Models of atoms

▲ **Figure 4.8** *Starry Night* by Vincent van Gogh



▲ **Figure 4.9** Historiography of the Cold War



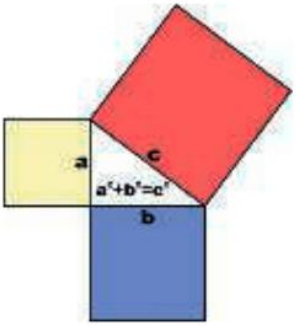
▲ **Figure 4.10** Monetarist economics versus Keynesian economics

THINKING POINT

What could each of the examples (Figures 4.2–4.11) be used for, if used effectively?

By all means use these examples, but if you do, then use them well and show that you really understand their relevance. They are commonly used in TOK because they fit well with the point being made, but with weak understanding they are ineffective.

Here are some thoughts on how they might be used successfully and unsuccessfully.



▲ **Figure 4.11** Proofs of or involving Pythagoras' theorem

Figure 4.2 Galileo and heliocentric theory

This is an excellent example of how scientific theories can change based on evidence. The argument that religion and natural sciences use comparable arguments is problematic.

Figure 4.3 Flat Earth theory

This is an excellent example of a pseudoscientific theory. It is a poor and inaccurate example of what everyone believed before Columbus circumnavigated the globe (which he did not).

Figure 4.4 Darwin and the theory of evolution

This is an excellent example of scientific theories progressing. The idea that scientific theories are solely based on observation is a problematic argument and certainly not backed up by the work of Darwin.

Figure 4.5 Language, thought and the words for snow in one of the languages of the Inuit peoples

This could be an excellent example if you are presenting the idea that when translation is made between languages there are challenges. For example single terms need to translate into multiple terms, which can affect style and in some cases accuracy. However, using this as support for the idea that we cannot think without language and ideas related to the Sapir-Whorf hypothesis (in any form) would need to be handled very carefully.

Figure 4.6 Serendipitous discovery of penicillin

This is an excellent example of the way in which science sometimes works. To suggest this is the aim of science or that after the serendipitous discovery a scientific method should be ignored is problematic.

Figure 4.7 Models of atoms

This is an excellent example of the idea that models are simplistic representations of what is known, often used for learning, and that they represent the "best knowledge we have at any time". Any indication that these are what atoms look like or major misunderstandings of the models themselves is likely to be problematic.

Figure 4.8* Starry Night *by Vincent van Gogh

This can work well as an example of a specific style or school of art. It is also a good example of the use of imagination (the painting is not based on any specific scene that van Gogh had access to at the time of painting). It is often used to link to the generic role of emotion in visual art, but this is neither a good point nor a good example to back it up.

Figure 4.9 Historiography of the Cold War

Using historians' interpretations of the Cold War as an example of historiography is fine. The common problem with the example is that there is a lack of understanding of what those viewpoints are.

Figure 4.10 Monetarist economics versus Keynesian economics

This is a good example of how multiple theories can co-exist within the human sciences. It is sometimes used to suggest that economics is an "insecure" form of knowledge, which is overstating the problem and misrepresenting economics.

Figure 4.11 Proofs of or involving Pythagoras' theorem

This is fine as an accessible example of proof in mathematics. However, you should make sure that what you are talking about in mathematics is a proof rather than a justification. In mathematics there is a distinction, where suggesting that a justification is a formal proof shows misunderstanding.

Points of view

Point of view is a generic term used to encourage you to look at an essay title from different directions. Alternative phrases that would all count as points of view include *perspectives*, *counterclaims*, *counterexamples*, *perceptions*, *positions*, *thoughts* and *ideas*. To show your thinking skills it is essential that in your essay you show you have considered different points of view. These different points of view will then become part of your evaluation of the title. So it is not just an awareness of different points of view that is required, but critical engagement with different points of view. Some of the different ways this can be done are considered below.

Within paragraphs

Within a paragraph it is possible to set out your position and provide an example, but there may also be some space for a different point of view. This might be the idea that what is being shown by an example is not necessarily one-sided, but that in simplified form it is only one side that is backed. This is likely to be a short point of maybe a sentence or two.

At the end of a paragraph

This is where you might find a more substantive point of view. This could take the form of a counterclaim or counterargument and may be backed up by a counterexample. It may also not be a counterclaim, but just be a different position that might be best described as a perspective.

In the conclusion

This is where you tie the essay together. You might consider:

- summarizing different points of view
- subtly raising questions about the position of the title with reference to points of view.

Implications

As can be seen from the marking instrument, the concept of implications only really needs detailed consideration in essays that reach the top band. In one sense this is true, but even with weaker essays, trying to incorporate some of the ideas behind the main points will help your essay—even if they do not end up making it a top-band essay. There are a number of ways in which the concept of implications can be examined.

- Implications can be explored in an answer to a "So what?" question. The idea here is that after analysing a main point or having explored a concept from a variety of points of view, the student rhetorically asks the question "So what?" and it is the answer to this question that provides the implications. To clarify, here is a scenario from the essay on doubt. Having used the natural sciences as an area of knowledge for this essay you might have considered the idea that doubt is one of the factors in deciding

THINKING POINT

Now return to the essay title "To what extent is doubt the only key to knowledge?" From the thoughts you have had on the main points you wish to raise, what would make the most effective examples? Make a note of these.

THINKING POINT

Again, think about the essay "To what extent is doubt the only key to knowledge?". Firstly, see if you have raised any ideas that could be seen under the heading of "Points of view". Now go back to see if you can identify parts of the essay that will benefit from using a form of points of view. Note what these might be and where they will need to be added.

when to do further exploration, then you might have given a detailed example. At this point you could ask the question "So what?". When reflecting further you suggest this raises questions about reliability, but you counter this to a degree by noting that in one sense there is always "doubt" in scientific knowledge; in the end you conclude this is more on a philosophical level rather than a practical level. It is these further reflections that are indicative of addressing implications.

- Some students find it easier to understand the concept of implications if thought of as a series of reflections on the different points made in the essay.
- Another possible way of understanding the concept of implications is through the metaphor of them offering a "big picture". You might have given quite a lot of detail in one part of the essay. In this case the implications would be addressed by you taking a step back to view the big picture and offer your reflections or "So what?" questions.

It is possible to find implications in many different parts of your essay, depending on how you have written it. However, for many essays there are distinct places where they appear most commonly. They may appear at the end of a paragraph or small section dealing with a particular TOK concept; in this case it is likely that the implications are linked to the concept under discussion. Or they may appear at the end of a larger section on an area of knowledge; these are more likely to be implications for the area of knowledge under discussion. Lastly, and possibly most commonly, they appear in the conclusion; in this case it is likely that the implications under discussion will be about the title itself. Of course you are not limited to having implications of only one type or only in one place. Overall, trying to provide some form of reflection on what you have written will always be helpful.

THINKING POINT

Going back to the essay "To what extent is doubt the only key to knowledge?", use one of the techniques noted to identify some of the implications of what you might say. It is also worth thinking about where these might fit into your essay.

CONCLUSION

To get started on your essay title, it is strongly recommended that you follow the process set out in this chapter. As you can see, there is lot of work in the initial stages, but if you do that work it will pay off. This is necessary before you get to the actual planning stage. If you do not give your essay a lot of thought early on, then it will cause difficulties later. Also this early engagement will allow you to make a genuinely informed decision on whether or not a particular essay is for you. It may seem like a lot of effort, but one of the main reasons a TOK essay is successful is because the student has connected to the essay and given the title considerable thought—remember that one of the major strands of this course is thinking. Ultimately, your essay is going to become your constant companion for a few weeks. Make sure it becomes your best friend, and really enjoy spending time together.

5 PROGRESSING WITH YOUR TOK ESSAY: THE PLANNING PHASE

In this chapter you will:

- ✔ consider different ways of planning
- ✔ consider different ways of looking at the following eight aspects of the essay:
  - the introduction
  - unpacking of key words and concepts
  - the overall discussion
  - argument
  - use of examples
  - points of view
  - use of implications
  - the conclusion.

These eight aspects will be considered using four different essay titles as examples.

INITIAL PLANNING

Now that you understand how to make a start on the essay, you need to begin the planning stage. You may have a prefered way to plan or you may have used techniques suggested by your school to do this. However, if you want some further ideas on this, then some techniques for planning the TOK essay are suggested below.

You will need to give a plan to your teacher for feedback and you will also have a meeting with them to discuss what you have done. This will all be summarized as meeting 2 on the Planning and Progress Form (PPF).

The planning stage can be a fun part of writing the essay as it gives you opportunities to experiment with ideas and try out different things without having to be too concerned about the writing itself. The more detail you provide at this stage, the better the feedback will be, so it is worth spending time on this.

By the end of the planning stage you should have a reasonable idea of what the final essay will look like. It is often a good idea to reflect on the planning intuitively. If you feel it is flowing well then it is likely the writing of the essay will flow, whereas if you believe it is not fitting together then the essay itself is unlikely to fit together.

The essay writing is mainly an individual process, but as a starting point it is often a good idea to work with your peers. The exercise below gives one example of how you might do this.

COLLABORATIVE ACTIVITY

Group work

Get together in a group—ideally form a group of at least six. Start with a large piece of blank paper and different-coloured marker pens. Begin by writing out the title in one colour with lots of spaces between the words.

Now spend five to eight minutes adding your initial thoughts to the page, taking comments from everyone in the group. Using different colours, record your thoughts. This could involve underlining, writing down initial ideas, noting areas of knowledge, writing out associated questions and jotting down examples.

This could be undertaken as a classroom activity arranged by your teacher. It could be done with all six titles and the exercise completed with a number of different groups who all contribute to each title; in this case it would operate as a carousel activity.

Ask your teacher to look through each poster and discuss with you anything that might be misplaced or misleading. Then display the posters somewhere they can be seen and use them to help you produce an individual, more detailed plan for the essay you have chosen.

Keep academic integrity in mind. Each essay has to be clearly the work of the writer. This exercise needs to be seen as a "warm-up" to your writing, to get the ideas flowing. It is not about discussing the finer points of the essay or giving detailed examples. There is a line between thoughtful collaboration and collusion—do not cross that line and be accused of collusion.

ACTIVITY

You now need to get into the thinking process of writing the essay. This activity could be used as a warm-up to your main planning. It also makes a good follow-up to any group work you have undertaken on the essay.

You will be focusing on the following three questions, taken from a thinking routine called **"See, Think, Wonder"**.

1. "What do you **see**?"
2. "What do you **think** about what you see?"
3. "What does it make you **wonder**?"

The "See, Think, Wonder" thinking routine was developed by Project Zero, a research centre at the Harvard Graduate School of Education.

These questions can be applied to the planning of the TOK essay.

In response to question 1, you are asked to write down the key words.

For question 2 you are asked:

- how you feel about the title—whether you agree, agree with reservations, agree depending on the area
- to write in your own words what the title requires you to do
- how the title connects to the areas of knowledge chosen or prescribed
- to note original, specific examples
- to write down any initial differing views.

To answer question 3 you will ask yourself a further set of questions.

- What more do you need to know?
- Where you can find further detail? For example, can a piece of work you did in another subject help you?
- Is there any particular order in which to put this together—on what basis do you decide?
- What are the implications of what you are saying? What are your reflections on this?

DETAILED PLANNING

You are now in a good position to start a detailed planning process. Detailed planning is personal in that what works for one person does not necessarily work for another. If you have a favourite technique that always works for you, then use that for the detailed planning process. However, if you want to try something new, or feel that your current technique would not work with the TOK essay, then here are a few other techniques you could try.

Linear planning

This is an example of an approach to planning an essay where you note your ideas in a linear format. There are many variations of this, but two possibilities are suggested below. The key to success here is the detail you provide for the aspects listed.

Version 1

Planning the essay
Areas of knowledge
Introduction
Key words
Overall discussion
Argument

Use of examples
Points of view
Use of implications
Conclusion

Version 2

Planning the essay
Areas of knowledge
Key words
Thesis or stance
Key point—argument—example—point of view
Key point—argument—example—point of view
Key point—argument—example—point of view
Key point—argument—example—point of view
Key point—argument—example—point of view
Conclusion

Planning by section

This is a more detailed style of planning, but is still quite linear. This might suit you if you like to know clearly where you are going before you get there.

Introduction

- Establish a context for the title.
- Explain the significance of this topic for us today—be specific.
- Introduce key ideas within the context of the prescribed title.
- Mention the main points that will lead to an examination of your title.
- Establish your thesis statement or stance.

Body

1. First paragraph
   a. Clarify a point you made in the introduction.
   b. Find an example to back up the point—the example should be clear and you should understand it.
   c. Ensure that there is a link between the claim and the example, explain further as necessary and ensure links with an area of knowledge.
   d. Provide a different point of view.
2. Second paragraph

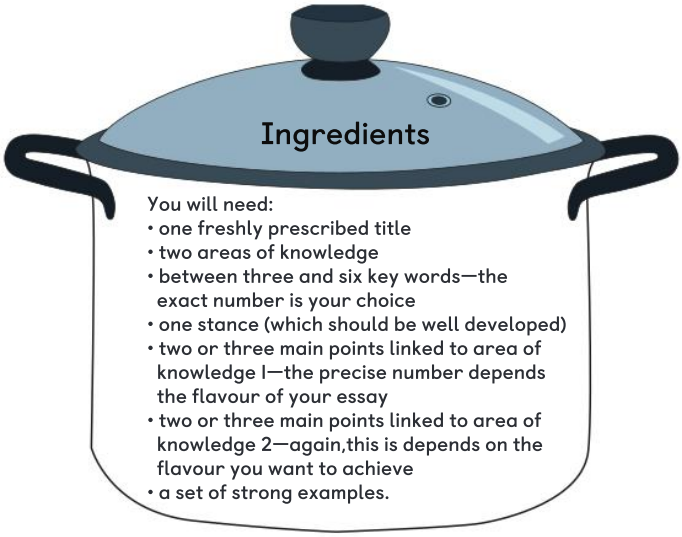
   Using another point from the introduction, or one that follows from the first, repeat the process.
3. Continue to repeat the process four or five times until you have covered all your points and addressed both your areas of knowledge.

Conclusion

- Return to your thesis or stance. Provide some thoughts on what has changed or developed through writing the essay.
- Think about implications and discuss them. You may have addressed some of these during some of the body paragraphs. These may be implications within an academic field or real-world implications.
- Provide one or two sentences that bring the essay to a close.

Planning by recipe

This allows you a much less linear and possibly more creative way of planning and may work well if you are prone to returning back to earlier parts and making small changes. You could have all your ingredients cut out on different pieces of paper then move them around to see how everything fits together before your main preparation begins.



Initial preparation

- Explain how and why you will select a prescribed title.
- Choose two areas of knowledge.
- Select between three and six key words and think about what each of those key words is doing, as these are the basis for your recipe.
- Develop a stance, think about how it will be used, let it mature and then return to it for final preparation.

- Make an initial selection of three or four points for area of knowledge 1.
- Make an initial selection of three or four points for area of knowledge 2.

Procedure

- Decide on the role of the areas of knowledge, key words and your stance in the introduction.
- Take a key point and work on it in an area of knowledge. Repeat this for other key points. Working on key points involves creating arguments and conclusions. Within these, or at the end of these, ensure that you have noted different points of view. Also, do not forget to add a strong example at this stage.
- If they are matured enough, add some reflections or implications as "seasoning". If these are not matured, return to the previous stage and make additions.
- Do the same for area of knowledge 2.
- If you want a slightly different flavour then area of knowledge 1 and area of knowledge 2 can be more integrated and you can look at similar ideas in both at the same time.
- Ensure that you add the conclusion, which will bind everything together. Then add more final reflections and implications as the final "seasoning".

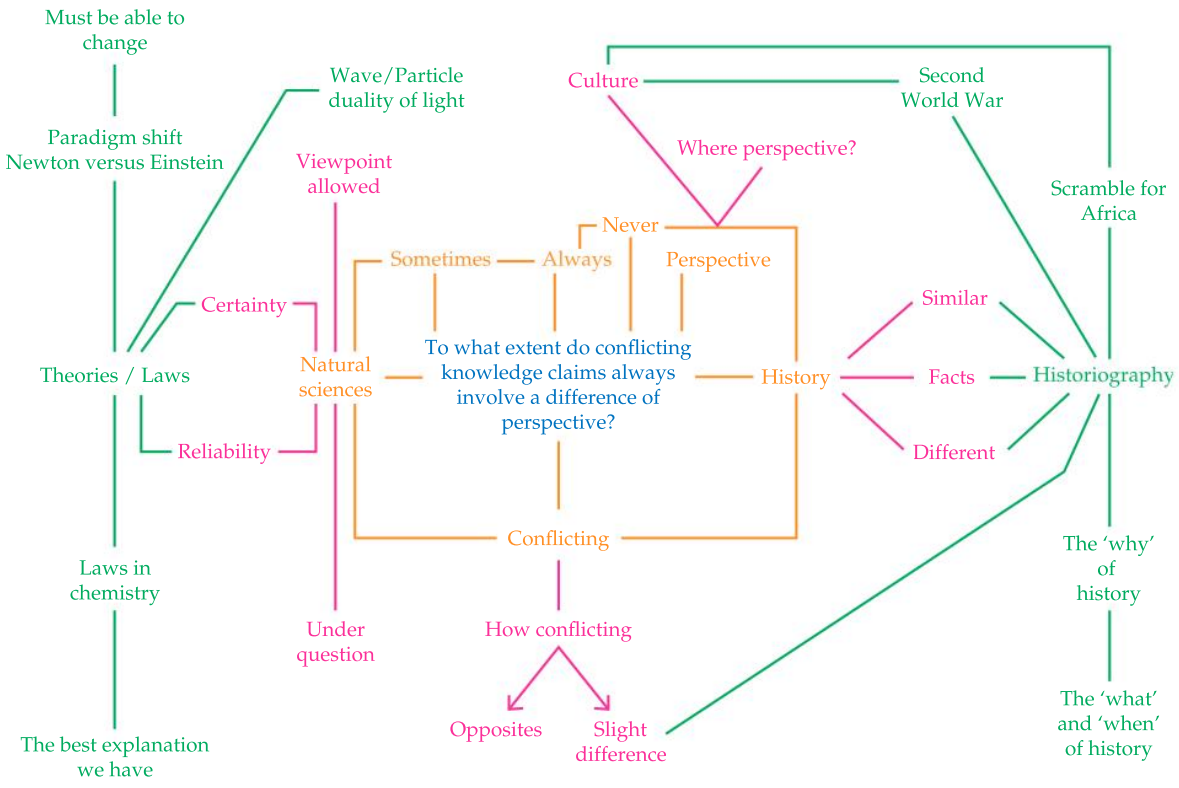
Mindmaps

As you are probably already aware, the idea of a mindmap is that a central theme or idea is placed at the centre of the page and you place your thoughts around it. These are called first-level thoughts. You continue adding thoughts, but if a thought was triggered by a first-level thought rather than the original idea then this connects to the first-level thought not the original idea. You now have second level thoughts connected to first-level thoughts. Ideally, you should try capturing your thoughts in as few words as possible. You can now continue in the same way with third-level and fourth-level thoughts. For the whole essay mindmap it is recommended that you try to keep within a maximum of six levels.

Figure 5.1 is an example of what the first three levels of a mindmap might look like for the following essay title.

> To what extent do conflicting knowledge claims always involve a difference of perspective?

- The title is at the centre—in blue on Figure 5.1.
- The first-level thoughts, in orange, note the areas of knowledge, key words and concepts, and different positions.
- The second-level thoughts, in pink, represent the general unpacking of the key words and concepts.
- The level-three thoughts start to work with the specifics of the essay, indicating possible examples and why we might use those examples. These are in green.



▲ **Figure 5.1** Example mindmap

- Thoughts at levels beyond this would take you into further specifics until you feel you have enough detail to write your essay.

The planning process: Final thoughts

As already acknowledged, what works for one person as a planning process does not necessarily work for another. However, all successful essays need planning by whatever means and the key is to determine what works for you, what you find intellectually stimulating and what is enjoyable. This is really the thinking process behind the essay.

THE DIFFERENT ASPECTS OF THE ESSAY

In this section you will consider in more detail eight different aspects of the essay and look at exemplars of how each aspect can be used. All the examples are taken from past essays written by students, so you will see a variety of styles and also minor errors in grammar, punctuation and spelling. The eight aspects of the essay are:

- the introduction
- unpacking of key words and concepts
- the overall discussion
- argument
- use of examples
- points of view
- use of implications
- the conclusion.

To do this you will consider four essay titles. These are based on titles from past examinations. The titles have been reworded slightly to ensure that they are in the same format as the questions you will be working with.

Title 1: Is the acquisition of knowledge more a matter of recognition than of judgment? Evaluate this claim with reference to two areas of knowledge.

Title 2: Is the availability of more data always helpful in the production of knowledge? Explore this question with reference to two areas of knowledge.

Title 3: How valuable is accuracy in comparison to error in the production of knowledge? Discuss with reference to two areas of knowledge.

Title 4: To what extent do you agree with the claim "Metaphor makes no contribution to knowledge but is essential for understanding"? Answer with reference to two areas of knowledge.

> "You can always edit a bad page. You can't edit a blank page."
>
> (Jodi Picoult, author)

The introduction

Here are some exemplar introductions to give you some ideas on different styles of opening your essay.

Example 1

Title 3: How valuable is accuracy in comparison to error in the production of knowledge? Discuss with reference to two areas of knowledge.

The production of knowledge is essential for the advancement and progression of humanity. Knowledge itself may consist of, however is not limited to theories, social norms and facts. To effectively answer the prescribed question the relationship between error, accuracy and the production of knowledge must be determined. The concepts of error and accuracy are not definitive across areas of knowledge and therefore nor is the nature of knowledge itself. Hence, partial accuracy does not always mean truth; error does not always indicate a lie and knowledge is not always correct.

Comment

This is an example of a very simple but quite effective introduction. It is clear that the student has understood the main gist of the title, but is also setting out the boundaries for what will be discussed. There is a good indication here that key terms are understood, but the student has resisted the temptation to give simplistic definitions of them; it is assumed that when differing definitions are needed they will be given. The final sentence shows the student is giving thought to what positions to take and how to justify.

TIP

If you are not sure what to write for an introduction, making it clear, simple and to the point is always good advice. Resisting simplistic dictionary definitions is also a good idea.

Example 2

Title 2: Is the availability of more data always helpful in the production of knowledge? Explore this question with reference to two areas of knowledge.

Sherlock Holmes had once cried out, "Data! Data! Data! I can't make bricks without clay!", encapsulating the very importance of data in the construction of knowledge (Doyle 72). However, in reality, the production of knowledge is a far more complicated process than that of brick making, as the availability and acquisition of more data does not always guarantee the data's reliability or its ability to be processed. As such, having more data might not necessarily aid the production of knowledge, even hindering it in some cases. This essay will thus analyse the implications of acquiring more data in the construction of knowledge, broadly defining data to be any form of factual information that can be used as a basis for definition, reasoning, or calculation. This essay will be specifically investigating this in the areas of history and the natural sciences to show that the availability of more data is mostly, but not always, helpful when producing knowledge.

Doyle, Arthur. (1972). *The Adventures of the Copper Beeches*

Comment

This is a clear and concise introduction that captures the attention of the reader. Starting the essay with some form of saying or quote can be very effective, but it needs to be done well. This is a case where it is used effectively—the quote is short and to the point, and the writer links it clearly to the title. The quote is relevant to the essay and including it has a definite purpose. With this sort of introduction, to provide a degree of coherence to the essay, some students refer back to the quote in the conclusion in order to tie the essay together. This introduction then sets out the boundaries for the essay without getting tied up in dictionary definitions that often have little meaning from a TOK perpsective, or that leave the student little room for manoeuvre when working with the key concepts. The student also introduces the areas of knowledge, which will be under discussion in the main body.

TIP

Having quotes in your essay is fine, but there must be a reason for them being there; you must give them a clear purpose and you must refer to them. If there is no engagement from the writer, a quote will come across as irrelevant and/or tokenistic and will not make an effective contribution.

Example 3

Title 3: How valuable is accuracy in comparison to error in the production of knowledge? Discuss with reference to two areas of knowledge.

Error and accuracy are generally viewed as diametric opposites; wherein accuracy is described as the lack of error and vice versa. But these concepts are actually more complex and dependent upon individual knowledge. During school we are rewarded for being accurate, whether in maths or spelling. As a physics student, error is encountered throughout the learning process; often in it's reduction. Error is continuously rejected in favour of accuracy. However, when learning about famous experiments, the reason they are instructive is often not because they were accurate but because they contained an error or failed. These experiments spawned growth in the production of knowledge, such as Newton's Universal Law of Gravitation, which was superseded by Einstein's Theory of General Relativity. Experimentally, Newton's Law was found to be inconsistent and so reconsideration of the concept produced knowledge leading to Einstein's Theory. Krzysztof Bolejik (2015) *From Newton to Einstein: the origins of general relativity* from https://theconversation.com/from-newton-to-einstein-the-origins-of-general-relativity-50013

TIP

If you use this approach it is important not to forget that you will need some form of second introduction.

Comment

This is an example of a clear concise introduction where the student recognizes the possibility for accuracy and explains why within a TOK context it needs to be considered in a much more complex way. In this case only one area of knowledge is introduced—the introduction of the other one comes later. The student rather unusually introduces some examples here, which is setting up for what comes next. One of the advantages of this approach is that it allows different interpretations of the key words to be given clearly.

Key words and concepts

Here are a set of examples of how key concepts and words can be used in a TOK essay.

> I don't believe Wikipedia about anything. I don't go there for anything but keywords.
>
> (Michael Pitt, actor)

Example 1

Title 3: How valuable is accuracy in comparison to error in the production of knowledge? Discuss with reference to two areas of knowledge.

This essay investigates the ambiguous roles played by both error and accuracy in two areas of knowledge including the natural sciences and [history]. These areas encompass the notions of both practical and theoretical knowledge respectively. In the natural sciences the contribution of error is just as essential and valuable as accuracy. Through the quantification of error and knowing the distance a result is from accuracy, knowledge is determined. However, discrepancies may exist in different areas of knowledge such as [history] where the contribution of error results in the possibility of a regression in knowing. Therefore, through understanding the nature of accuracy and error in different areas of knowing, one can come to fairly judge their respective contributions to the production of knowledge.

Comment

This is an effective use of the key words *error* and *accuracy* because it provides a concise but nuanced approach very early on in the essay. The student is suggesting that the relationship between error and accuracy can be seen in one way in one area of knowledge, but may need a different formulation in the second area of knowledge.

TIP

Concise definitions that hint at possible differences in the introduction are often a good idea, but remember that they will need to be revisited and further expanded as the essay progresses.

Example 2

Title 2: Is the availability of more data always helpful in the production of knowledge? Explore this question with reference to two areas of knowledge.

Data is most commonly utilised in the natural sciences and certain areas of mathematics. This is owing to the fact that all knowledge, most found commonly in the form of theories and formulas must be supported by this form of information. Having access to data, particularly larger amounts, would presumably be beneficial in the production of knowledge. The issue is whether this benefit 'always' occurs. The term 'always' is rarely used within the sciences and maths, because logically it would seem impossible to examine every possible situation in order to confirm that this practice does indeed always occur. Therefore for the purpose of this essay, I will examine four individual examples to investigate whether data availabilty is always beneficial within those restricted conditions. This will allow me to still examine the question but in a way that concurs with the natural sciences and mathematics approach to the term 'always'.

Comment

This is an effective use of the key words *data* and *always* because it shows the importance of the use of the "absolute terms". In this case the student has noted that *always* is one of these terms. The student explains that on first consideration using *always* would be a fine idea, but on reflection, in the areas of knowledge that have been chosen, this is not a fruitful approach. The decision reached is that the term will be considered under restricted conditions.

TIP

Remember that if your title contains one of these "absolute terms" it is useful when looking at different points of view as it allows you to argue against the absoluteness of the statement rather than the statement itself.

Example 3

Title 1: Is the acquisition of knowledge more a matter of recognition than of judgment? Evaluate this claim with reference to two areas of knowledge.

However, judgment is also not separate from recognition in the process of artistic knowledge acquisition, and thus this process entails a cycle of recognition and judgment. Artists recognise existing techniques and cultural norms in art, yet challenge these by employing personal intuition and imagination with creative judgment to create art to best express themselves. This shows that there is no 'right way' to do art, as there similarly is no 'right answer' in any knowledge. When more people employ creative judgment, artistic norms are challenged, and shared knowledge of an artwork's quality changes, reflecting that knowledge is never stagnant. This shared knowledge is recognised by those exposed to it until the cycle begins again.

TIP

Remember that you should be returning to the key words and concepts throughout the essay as you create different arguments and look at it from different points of view.

Comment

This is a very good example of how key words continue to play a role in an essay. It is often thought that they are defined early on and then can be ignored. This is not the case. Key words or concepts are contestable and this is what makes them interesting in a TOK essay. In this case the student considers quite late in the essay the idea that judgment and recognition potentially work in a cycle thus bringing the concepts together within the area of knowledge of the arts.

> A scientist's aim in a discussion with his colleagues is not to persuade, but to clarify.
>
> (Leo Szilard, scientist)

Overall discussion

Here you will consider some different ways that the overall discussion can be helped to flow by using the stance or thesis statement.

Example 1

Title 2: Is the availability of more data always helpful in the production of knowledge? Explore this question with reference to two areas of knowledge.

I do agree that the availability of more data is helpful in the production of knowledge in most occasions but there are instances when the availability of more data is not helpful or even have a negative effect on the production of knowledge and in this essay I will be evaluating how the availability of more data helps in the production of knowledge.

TIP

The basic stance sets up your position as a writer. For this to be effective, you will need to continue to develop the stance throughout the essay.

Comment

This is a good example of where a student takes a basic stance in the introduction. The stance is clearly stated and suggests a general direction for the essay.

Example 2

Title 4: To what extent do you agree with the claim "Metaphor makes no contribution to knowledge but is essential for understanding"? Answer with reference to two areas of knowledge.

Subsequently, I propose the thesis that the creation of knowledge can rarely be attributed to a single cause, and hence that metaphors are merely a component of a complex system that treated as a whole can contribute to knowledge. They may, however, stand alone when contributing to one's understanding. Within the Natural Sciences, metaphors may be the genesis of great ideas, and similarly in the Arts, metaphors can be used with external knowledge to reach new conclusions and ideas.

Comment

This is a good example of setting out a slightly more thought-through stance in the introduction, thus setting up the overall discussion in the essay. In this case the distinction between knowledge and understanding is underlined without attempting to define them.

TIP

This slightly more detailed stance again sets your position as the writer. However, you will need to continue to develop the stance throughout the essay as you will also need to continue to think carefully about the relationship between knowledge and understanding.

Example 3

Title 3: How valuable is accuracy in comparison to error in the production of knowledge? Discuss with reference to two areas of knowledge.

According to the Correspondence Theory of Truth, something is true because it corresponds to fact or reality.[1] This essay takes knowledge to be an expression of truth. Accuracy can be broadly defined as the degree of corroboration to truth, or reality, and error as the deviation from truth.

[1] David, Marian. 2002. "The Correspondence Theory OfTruth". *Plato.Stanford.Edu.*

Comment

In this case the student takes a stance by linking the title to a concept not mentioned in the title—the correspondence theory of truth. This is consistently referred to in the essay and the reader is taken on a journey to a conclusion that suggests we need to use a different theory of truth—the coherence theory of truth. The wording in the conclusion is as follows.

TIP

Care needs to be taken when starting in one position and moving to another as you will need to be convinced that a focus on this will allow you to respond fully to the title—it should not take you off on a tangent. However, this technique can be very successful as it provides a clear structure for the essay.

Yet the discussion is limited by assumptions made from the beginning. One key assumption is that truth is a correspondence to reality. Instead, according to the Coherence Theory of Truth, truth can be defined by how coherent it is with other truths. This would result in a different appraoch to the task because error and accuracy will be dependent on existing truths in the areas of knowledge, rather than on the umbrella term of 'reality'.

The essay is structured by starting in one position and then transporting the reader to a slightly different position. There is no requirement to use technical terminology such as different theories of truth in TOK essays. You just need to show thinking about TOK concepts such as truth, and that can take all sorts of different forms.

> The aim of argument, or of discussion, should not be victory, but progress.
>
> (Joseph Joubert, writer)

Argument

Example 1

Title 1: Is the acquisition of knowledge more a matter of recognition than of judgment? Evaluate this claim with reference to two areas of knowledge.

History is an alternative area of knowledge in which judgment plays a more significant role in the acquisition of knowledge than recognition. The question is posed: Is judgement essential in building knowledge in history? As a history student I have observed that many pupils who do not take the subject perceive it as a collection of concrete facts from the past, an acknowledgement of a past event or occurrence. Judgement on how an event transpired, it's outcomes, or who was involved playing no significant role in an individual's collation of knowledge. Solutions to historical questions like the aforementioned can sometimes be acquired through recognition of fact however, more often a judgement is required by a historian in order to validate and explain the events and its occurrence.

TIP

This is the idea of creating an argument by setting up a question, suggesting the answer is not the full story and in this way justifying why another position is needed. This can be a highly effective technique, but check that the question, the answer and the direction for the new answer all fit together.

Comment

This is a good example of how to set up and then start the evaluation of an argument. The student sets up the argument using a question. Then a position on the question is given. In this case it is the use of the word *however* in line 7 that indicates there is another position. It is at this point that an example could be added, ideally one that will provide further clarity.

Example 2

Title 2: Is the availability of more data always helpful in the production of knowledge? Explore this question with reference to two areas of knowledge.

To begin with, how is knowledge produced in the Natural Sciences? Though it can be argued that the element of serendipity in the sciences triggers the construction of knowledge, the scientific method is typically employed to derive knowledge in this AOK. The scientific method follows a set of rigid, logical and rational order of steps that allows us to develop scientific knowledge, granting further insight into the inner workings of the world. Beginning with the questioning of a subject, scientists narrow down these thoughts to one fundamental hypothesis that they can effectively revolve their experiment around.[5] Thereafter, they appropriately craft experiments relative to the stated hypothesis for the primary purpose of data collection. This data is imperative in nature for initiating interpretations from data results and arriving at a sound conclusion. Verification of this conclusion is further ensured through the repetition of experimentation and guaranteeing that the additional data corresponds to the pre-conceived notion. The product of this detailed process is knowledge pertinent to the field of sciences.

[5] Martyn Shuttleworth (Jan 19, 2008). *Steps of the Scientific Method*. Retrieved April 12, 2016 from Explorable.com: https://explorable.com/steps-of-the-scientific-method

Comment

The student sets up the argument very effectively here. Starting with what is sometimes seen as a common way to produce knowledge in the natural sciences (effectively by good luck), the student then gently questions this position. Having set the scene by discounting one idea, the student now proceeds to build the argument based around the scientific method. This is detailed enough to ensure the reader is convinced that the scientific method can work in this way. After this would be the ideal point to add an example to back up what was said or to take the argument even further.

TIP

This is a common technique used to set up a successful argument and one that can be effective when writing your TOK essay. If you are unsure of how to do this, then take the time to practise.

Example 3

Title 3: How valuable is accuracy in comparison to error in the production of knowledge? Discuss with reference to two areas of knowledge.

Historical perspectives are often based on their understanding of an event, which is derived from empathy. And it is through their unavoidable and subconscious use of imagination and emotion that historians gain this empathy., hence there is room for historical interpretations to be swayed by implicit bias. For example, most historians view the Empress Dowager of the late Qing dynasty as a cruel and ignorant leader who accelerated the decline of the dynasty. A typical example of such a historian is the British, male Jack Gray, in his book that focused on this period of Chinese history as a whole (Gray, 2002). The Chinese, female historian Jung Chang views the Empress much more favourably in her book which solely focuses on the Empress (Chang, 2013). Chang's perspective is often seen as a misinterpretation, because it defers from the norm in an unsubstantiated way; because of Chang's failure to recognise the severity of certain events, the methodology she adopted to view the Empress could be said to be a misapplication. On one hand, Chang's misinterpretation, and hence error, could be deemed to be baseless and not valuable for a historically neutral and accurate perspective of the Empress. But because this error was most likely influenced by Chang's unique origin as a female Chinese historian, thus sympathetic towards the Empress, it can be argued that her interpretation is reflective of a different demographic. The purpose of History is not rooted in universality and objectivity, instead it is to present interpretations and information about this world, and so reflections of the culturally diverse society in which History is made actually enriches

this area of knowledge, instead of compromises it. Furthermore, Gray's interpretation cannot be said to be neutral and accurate either because of his book's focus on the overthrow of the Qing's dynasty, he therefore sees these events through a revolutionary lens.

Chang, Jung. (2013). *Empress Dowager Cixi: the Concubine Who Launched Modern China.* Great Britain: Jonathan Cape. Print.

Gray, Jack. (2002). *Rebellions and Revolutions: China from the 1800s to 2000.* New York: Oxford University Press, Print.

TIP

If your teacher suggests you are being too descriptive, try aiming at this style of analysis. However, it is dependent on you really understanding your subject matter—do not try this on ideas you do not fully understand.

Comment

This is a very good example of how an argument can be constructed and brought to life through an example. In this case a clear and thoughtful description of the example is provided, but then an argument is constructed that suggests the reason for discrediting the source was only one way of interpreting this; justification for the argument is presented by suggesting that history is about present interpretations and information, so culturally diverse viewpoints are needed. The fact that the position of each historian is made clear strengthens the argument further.

Use of examples

This section will consider different types of example and some of the different ways in which they can be used.

> "Few things are harder to put up with than the annoyance of a good example."
>
> (Mark Twain, author)

Example 1

Title 4: To what extent do you agree with the claim "Metaphor makes no contribution to knowledge but is essential for understanding"? Answer with reference to two areas of knowledge.

When learning about chemical equilibrium, my teacher introduced the concept that many chemical reactions cannot reach completion because the products constantly react to form more reactants; he concurrently displayed the mathematical expression quantifying equilibrium. From this it was clear that many students fully understood as they could predict the effects of different variables on the equilibrium expression, demonstrating an understanding without the use of metaphor. While many could understand equilibrium without metaphor, some could not. My chemistry teacher then used metaphor, telling the class to think in terms of fish swimming between two separate tanks at equal rates. Subsequently the struggling students understood. The metaphor had effectively linked their understanding of another familiar field, to fill the gap in the chemical and mathematical knowledge that it was required to understand without metaphor. Therefore, some concepts require certain levels of existing knowledge to be understood, but equally deficits in existing knowledge can be addressed through metaphor.

TIP

This is a good demonstration of a personal example. It is personal to the individual who wrote it, but it is clearly related to academic knowledge. Using very personal examples that do not link to academic knowledge is often less effective.

Comment

This is a personal example and it shows understanding of how the natural sciences work. The example is focused on explaining an aspect of the title and how that aspect of the title was used in something the writer understands. Although the example took place in a chemistry class, it is explained in such a way as to be accessible to readers. The last sentence indicates that the student has reflected on the precise purpose of the example and suggests that from here there is another point of view to consider.

Example 2

Title 2: Is the availability of more data always helpful in the production of knowledge? Explore this question with reference to two areas of knowledge.

A real life example of the point above is my consideration of data for my History Internal Assessment, where I had to write an argumentative essay about the Chinese Civil war which lasted from 1927 till 1949. Knowing that writing about all the civil war events that had happened over that 22 year timeframe within my word limit was impossible, I had to shorten the timeframe to the last 3 years of the war in order to provide an adequately significant and in-depth discussion. In doing so, I had to select data specific to that timeframe and relevant to my topic, before organizing the data into meaningful forms. Inevitably, sources without organization are meaningless, but once organized, data becomes subjective. The availability of more data on the entire Chinese Civil war would therefore have been irrelevant thus useless in helping me to produce substantial knowledge for my Internal Assessment work.

Comment

This is a case of where the example backs up a point being made; it shows a good understanding of a student acquiring knowledge in history. It is a successful example because the student has taken an idea from a history class and understood that it fits within the TOK context of the essay. Following this, ideally there would be further analysis.

TIP

This is a good example taken from the student's own academic learning. This is a common way of finding effective examples and it is strongly recommended that you try to use this style of example.

Example 3

Title 1: Is the acquisition of knowledge more a matter of recognition than of judgment? Evaluate this claim with reference to two areas of knowledge.

One of my Principal's lectures this year brought to my attention the old english tradition of a Gentleman's Park; a fantastically well maintained estate garden of sweeping hills with perfectly kept grass and specifically placed trees that appeared natural to the unknown eye but were in fact thoughtfully planned and expertly upkept. A parallel was then drawn for these very english gardens to the first sightings of the landscape in Tasmania described as looking like 'a gentleman's park in England, laid out with taste …'; and 'open plains that resemble well ordered parks'[4]. However, despite this comparison made by the European explorer John Hudspath, no reasoned or intuitive judgement was used to assume these 'gardens' were intentionally cultivated by the Australian Aboriginal people over hundreds of generations. Instead it was recognised they looked similar but discounted as human intervention and therefore, incomplete and partially incorrect knowledge was acquired. Today, over 200 years following the observations many historian have used these early accounts to make the judgement that in fact these picturesque landscapes were part of the 'biggest estate on earth', cultivated intentionally by the Aborigines in order to make agriculture easier, like the relocation of grazing animals for food. While initial recognition of similarities between the two topographies was important in the delayed knowledge of clever landscaping, it was the reasoned judgement of revisited observations that resulted in comprehending the intentional manipulation of land. This illustrates an initial recognition of something as incorrect and therefore largely misleading in one's acquisition of knowledge. When an evaluative judgement was applied, then a greater understanding was met and therefore our knowledge increased.

TIP

This shows that an example can be used to make a specific point, but at the same time it can also unpack some of the key concepts from the title. In an essay remember that your examples can do more than simply back up a point. Some will do just that, but others will have a more sophisticated purpose.

Comment

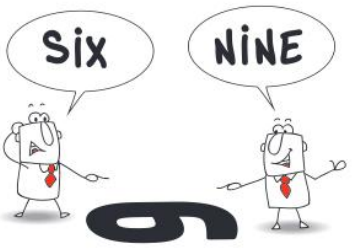
This is an effective use of an example that works with the concepts in the question and helps to unpack them. It starts by looking at the idea of what is recognized (in this case the "Gentleman's Park") and this is then reapplied in other contexts. However, when you start to think about this, there is the realization that it cannot be like this and therefore judgment is applied to explain the situation in the context and to produce a logical argument—the Aboriginal farmers have their own "fantastically well maintained estate garden", but the purpose and ownership of it are for very different reasons.

"Reality simply consists of different points of view."

(Margaret Atwood, author)"

Points of view

This section will consider examples of what falls under the category of points of view.



▲ Two points of view!

Example 1

Title 3: How valuable is accuracy in comparison to error in the production of knowledge? Discuss with reference to two areas of knowledge.

Countering this, useful results will always contain error. A measurement or result given without error is inherently meaningless, in that the result could differ by an unknown amount and therefore only represents an actual value if its boundary conditions are known through error. Error in this approach is generally quantifiable, however, while it can be reduced, it never becomes fully negligible. Thus, error is as valuable as accuracy in the initial measurement, so to give a useful result. In order to produce any meaningful conclusions, no matter how accurate the measurement, the error must be indicated. If I were measuring a mass, I could use a kitchen balance or the world's most sensitive scale, which still has an error of a single yoctogram (Hamzelou, 2012). While this may seem miniscule, this is still valuable in understanding the measurement and its uses. Therefore, in the process … [of producing knowledge, error is not only as equally valuable as accuracy, but is also inseparable from accuracy].

Jessica Hamzelou (2012) *World's most sensitive scales detect a yoctogram* from https://www.newscientist.com/article/dn21651-worlds-most-sensitive-scales-detect-a-yoctogram/

TIP

Counterclaims are one of the more common ways of showing that you understand the idea of points of view. Including some counterclaims in your essay is recommended.

Comment

This is a well-constructed and carefully thought-through counterclaim, which is one of the common ways of presenting a point of view. This is looking at the idea of error in any sort of quantity where the accuracy is only as good as what it measures. For example, if a weighing scale weighs to the nearest 0. 1 of a gram then the accuracy is also to the nearest 0.1. The point is therefore made that absolute accuracy is not really possible in the scientific world and therefore when talking about accuracy you automatically have to discuss error—as the student says, in this area of knowledge they are inseparable.

Example 2

Title 2: Is the availability of more data always helpful in the production of knowledge? Explore this question with reference to two areas of knowledge.

Hence the availability of more data helps in increasing the confidence of knowledge produced. This can be seen proved by the Central Limit Theorem, where when there is sufficient amount of samples (repetitions of same experiment) available, data will follow a normal distribution with the mean variance of the total set of data being the variance of every set of sample divided by the number of available sample sets. This theorem shows that the variance decreases when the number of samples increase and hence availability of more data increases the confidence or the credibility of the data obtained (Wolfram Research, Inc., 2016). However, the availability of more data only increases the confidence of accepting or rejecting the hypothesis but is not able to prove the hypothesis with certainty as the variance in data can only be minimized but not eradicated. Another issue with my argument is that it assumes that the methodology involved is perfect resulting in no systematic error but only random error, the effect of this assumption is explored in depth in the following paragraph.

Wolfram Research, Inc., 2016. Central Limit Theorem. [Online]. Available at: http://mathworld.wolfram.com/CentrallimitTheorem.html

Comment

This is a well-crafted piece of analysis that shows how an example can be used as the basis for providing a different perspective on a situation. The explanation of the central limit theorem is clear and explained in such a way that it is accessible to non-mathematicians. However, the fact that there are different ways of interpreting this and that it does not lead to certainty shows an understanding of perspectives; it is about the differences between the application and theorization of mathematics. At the end of the section it is good to see the indication that another position will be explored.

TIP

Offering different perspectives is another important way of showing you understand the term *points of view* and it is strongly recommended you do this in your essay. Offering perspectives does not always have to be linked to examples.

Example 3

Title 3: How valuable is accuracy in comparison to error in the production of knowledge? Discuss with reference to two areas of knowledge.

Yet, the inverse relationship between error and accuracy, in data collection, is useful as scientific accuracy can be increased by proactively finding and reducing experimental errors. Collected data with a lower uncertainty is considered to be more accurate[11], where knowledge of random and systematic errors is valuable in evaluating the accuracy of scientific data.[12] By improving methods and using more precise apparatus, accuracy can be increased to make resultant scientific knowledge more reliable, and closer to the truth.

[11] Brillouin, Leon. *Scientific uncertainty, and information*. Academic Press, 2014. 19.

[12] Sapsford, Roger, and Victor Jupp, eds. Data collection and analysis. Sage, 2006. 7, 47, 80.

TIP

This would come under the umbrella term of a perspective, but it is a very specific style of perspective. This is not something that would work in every essay title, but it is certainly worth considering when relevant.

Comment

In this case the idea of a point of view is again presented as a perspective, but this time through the idea of an inverse relationship. The title suggests the idea of comparison and therefore the idea of an inverse relationship is a different perspective.

> "Isolated incidents have lateral, lasting implications."
>
> (Katherine Ryan, comedian)

Use of implications

In this section you will look at different examples of what comes under the term *implications*.

Example 1

Title 3: How valuable is accuracy in comparison to error in the production of knowledge? Discuss with reference to two areas of knowledge.

Yet, while error and accuracy are valuable in pursuing historical truth, they are limited by being objectively immeasurable, unlike the natural sciences, where a system of uncertainty and error propagation exists. Furthermore, interpretation by a historian subjects sources to additional bias and error. Even OPVL analysis is subjective and dependent on a user's reasoning. Hence, in history, error and accuracy are fluid as more interpretations are included with source editing over time, which differs from the sciences where error and data accuracy is given a fixed value that is true to it.

TIP

As this extract is a reflective summary of what has already been said, it would count as an implication. These are often useful to use in an essay.

Comment

This is a good example of a reflective piece that comes towards the end of the essay. There is a reflection on the comparison of the two areas, where history is being compared to the natural sciences in terms of error and accuracy. It notes that source analysis using the technique of origin, purpose, value and limitation (OPVL) has a degree of subjectivity to it, even though on first consideration this might not be how it appears. Overall, the reflection is that in this context the natural sciences and history are quite different.

Example 2

Title 4: To what extent do you agree with the claim "Metaphor makes no contribution to knowledge but is essential for understanding"? Answer with reference to two areas of knowledge.

The implications of the claims and counterclaims above is that metaphors alone may make no contribution to knowledge, notwithstanding, they can still play an important role in the process of acquiring knowledge. To do this, they may either form the basis of a scaffolding of ideas or be used in conjunction with other ideas. The understanding that metaphors provide form a component of a complex system that treated as a whole makes a contribution to knowledge. Amalgamating metaphors, ideas and empirical data allows the creation of new theories; however, other forms of reasoning carrying higher academic legitimacy (Boxenbaum & Rouleau, 2011). It's inevitable that an integrative model is developed. By applying this synthesized model, the implications of my findings can extend much further beyond the Natural Sciences and the Arts, but rather, by process of induction, the final model can be applied to all of knowledge.

Boxenbaum, E., & Rouleau, L. (2011). *New Knowledge Products As Bricolage: Metaphors and Scripts in Organizational Theory. Academy of Management*, 272-296.

Comment

Many students incorporate implications into the essay without specifically signposting them. However, it is possible for some of them to be signposted by adding a specific paragraph towards the end of the essay. In this case the implications take the form of a summary of ideas and then a reflection on where this might lead. This is initially a summary of ideas from the arts and the natural sciences, but it is suggested that it may lead to knowledge in general.

TIP

For this style of implication to be fully effective it is very likely that some preliminary implications have been addressed earlier. This is a style of implication you can try practising to see if it works for you.

Example 3

Title 3: How valuable is accuracy in comparison to error in the production of knowledge? Discuss with reference to two areas of knowledge.

In this essay, by considering the role of error in making knowledge claims, it is evident that errors allow for greater insight in holistic AoKs like History, and is an essential stage in the search for accuracy in objective and universal AoKs like the Natural Sciences. The value of error in enhancing the depth of holistic knowledge produced extends to producing other spheres of knowledge that has to do with representing, emulating or explaining human nature and society, exemplified by how error in History adds to the pluralistic nature of human history, and therefore can be seen as just as valuable as accuracy. The value of eliminating errors in the production of accurate knowledge demonstrates that when generating any knowledge using induction, the consideration of errors is an unavoidable aspect of extracting the suitable simplified phenomenon from the wider picture. Hence, the specifics of the role of error in the production of knowledge is largely dictated by the purpose of the AoK—holistic knowledge or universal knowledge.

Comment

This is a good example of how an implication might work as part of the conclusion. A summary of the main claims in the essay has been made and then a thoughtful consideration of how these claims can be used in a wider setting is explained. The content is then tied together by the idea that any decision on this is made by deciding on the purpose of knowledge.

TIP

If you are going to use this style of implication then you need to ensure that you have explored enough material earlier on to make the summary apply to a wider setting.

> If all the economists were laid end to end, they'd never reach a conclusion.
>
> (George Bernard Shaw, writer)

The conclusion

In this final section you will look at different ways in which the conclusion to your essay can be formulated.

Example 1

Title 2: Is the availability of more data always helpful in the production of knowledge? Explore this question with reference to two areas of knowledge.

In conclusion, while data in Natural Sciences and Mathematics strive to be purposeful in the construction of knowledge, we question the extent to which the size of data helps in the synthesis of knowledge. The complications arising from the presence of more data, such as its unstructured organization and its limited use for interpretation, could possibly achieve an opposing effect of cultivating further interests in scientists and mathematicians to find solutions and derive further knowledge. However, the key lies in sifting through these overwhelming volumes of data and correctly interpreting its implications. Living in a day and age with abundance of information, the availability of data is no longer limited—it is in fact overpowering.[21] Therefore, we have to find a reasonable balance between the benefits reaped from using more data and the impediments that surface from copious data in knowledge production, But essentially, the aid provided by the availability of more data is largely subjective to the type of study or field that knowledge is constructed in.

Comment

The student starts by referring to the stance taken. However, the writer then goes on to suggest that it is more thought through than this and in the end very gently questions the title itself; it is suggested that maybe we should not worry about the amount of data as we can potentially deal with any amount and therefore the consideration needs to be about making decisions on the data and the areas of knowledge themselves. This ties the essay together nicely and demonstrates that the student has thought and reflected on what they have written.

TIP

This is a thoughtful conclusion in that it ties the essay together by making reference to what has been said before without restating all the detail; it also gently suggests there may be other things that need consideration.

Example 2

Title 4: To what extent do you agree with the claim "Metaphor makes no contribution to knowledge but is essential for understanding"? Answer with reference to two areas of knowledge.

My argument is not to say that metaphor does not have a valuable role in understanding and always contributes to knowledge, but is rather that metaphor's contribution to knowledge and necessity for understanding vary significantly within the arts and natural sciences. Thus, while the TOK title statement has some merit, I must refute its absolute claims. Metaphor can contribute to knowledge, and is not essential for understanding.

Comment

This is an example of a brief personal conclusion. In this case the student is offering a personal view on where they stand, having taken the reader through a series of arguments. The student has shifted from writing in the third person to writing in the first person and is now offering a final position to bring the essay to a close.

TIP

This could be described as a rather minimalist conclusion and is about the shortest that would be considered acceptable. If you are going to use this style of conclusion then you need to make every word count.

Example 3

Title 2: Is the availability of more data always helpful in the production of knowledge? Explore this question with reference to two areas of knowledge.

In summary, through discussion of data on knowledge production in relation to Mathematics and History, this essay concludes that the availability of more data helps the production of knowledge for most instances. The larger the quantity of coherent and corroborative data, the stronger the epistemological status of a knowledge claim. This is done through the process of proper justification with relevant data that gives rise to meaningful information. However, any quantity of data is useless without first being organised into meaningful forms of information to produce knowledge of significance and value in any area of knowledge. Finally, the quality of data, through reliabilism in the process of justification, supersedes the quantity of data in determining the validity and reliability of knowledge produced.

Comment

This is an example of a definitive conclusion. It summarizes very concisely what has been said in the main body of the essay, without repeating itself—it is what you would call a reflective summary. It is also effective in bringing the different sections of the essay to a close.

TIP

This short, reflective summary is a stylistically pleasing type of conclusion. However, such conclusions are not easy to write successfully, so you may want to practise.

SUMMARY

This chapter has provided you with some pointers on how to go about planning for the essay and some ideas for different ways in which you can put the essay together. Provided you did some initial thinking and gave some time to the planning process, you should now be in a good position to write the draft of your essay for your teacher to read.

6 COMPLETING YOUR ESSAY: THE WRITING PHASE

In this chapter you will:

- ✔ act on your plan to write your first draft
- ✔ read some sections of exemplar essays based around different areas of knowledge to provide some more ideas for reflection before handing a final draft to your teacher for comment
- ✔ read some introductions and conclusions to provide some more ideas for reflection before handing a final draft to your teacher for comment
- ✔ reflect on your teacher's final comments and read two full essays with commentaries to give you some final ideas for making the last set of changes before submission
- ✔ go through a final checklist to ensure that everything is in place as you reach the end of the essay-wrting process—this includes details on what is required when you have finished your essay:
  - handing it in to your TOK teacher for final upload (or uploading yourself) to the IB system
  - giving the fully completed PPF to your teacher so that the teacher's final comments can be added and it can be uploaded to the IB system.

INTRODUCTION

Now that you have given careful thought to your planning you need to think about and write a first draft of your essay, refine it and then give the final draft to your teacher for thoughts and comments. The final draft should be a full-length version of your essay, including references and bibliography. After your teacher has given you feedback, you can make the very last changes before submission.

Here are the stages you will go through.

- You write your draft essay based on your essay plan.
- Once you have finalized the draft, you give it to your teacher and they are required to provide feedback; this is likely to be both written and oral.
- You discuss the feedback with your teacher, make any final additions and changes to the essay, and complete the final section of the PPF.

Once this is done, you hand in a final version of your essay to your teacher, or your teacher will authorize you to upload it to the IB system. It will be checked by your Diploma Programme coordinator before the final button is pressed to send it to the IB, where the examiner will download it.

To help you with producing your draft essay, you will work with a selection of four essay titles. The four titles below are from past examinations, but have been reworded to ensure that they are in the same format as the questions you will be working with.

Title 1: To what extent do you agree with the claim "The quality of knowledge is best measured by how many people accept it"? Discuss this claim with reference to two areas of knowledge.

Title 2: To what extent do the concepts that we use shape the conclusions we reach? Explore this question with reference to two areas of knowledge.

Title 3: In mathematics and the natural sciences does the production of knowledge require accepting conclusions that go beyond the evidence for them?

Title 4: Why is the knower's perspective an essential attribute when pursuing knowledge in the natural sciences and history?

WORKING TOWARDS THE DRAFT

In Chapters 4 and 5 you learned about different aspects of the essay and some ways in which they could fit together. Your job is now to move this forward. The easiest way to do this is to think of the plan as a detailed map with explicit directions. You now follow the map using the directions. This will produce a written piece that is the basis of the essay draft. At this point you need to ask yourself some questions.

- Have I followed my plan?
- Does my essay flow?
- Is it clear what I mean or do I need to give more explanation?

These questions seem to relate to a basic instruction of "follow your plan". However, you need to take some care here as even following the first question may not be quite as simple as it sounds. The following extract highlights the point.

Note: you will see several errors in grammar and punctuation in this extract.

Title 1 To what extent do you agree with the claim "The quality of knowledge is best measured by how many people accept it"? Discuss this claim with reference to two areas of knowledge.

First of all, I wanted to explore this question from AOK Human Sciences perspective, the [discipline] of Psychology, to be exact. People are social creatures and it is important for them to feel safe and accepted by the majority. One of the ways to do so is to agree with other people's opinion and believe in what they do. Thus, people subconsciously accept and share knowledge because of the opinion of majority and sometimes they even do not try to analyze it or find some proofs, as they can be under the influence of different emotions, for example, fear or hopelessness. As not all people are able to use logic every moment of their life, especially when they are frightened by something, there is nothing extraordinary in such situations. For example, there was a case in Russia between 1598 and 1613, when three different people tried to get the Russian throne, as each of them pretended to be the luckily survived son of the previous ruler Ivan IV.[3] However, the question is – why Russian people accepted them all and did not hesitate after the appearance of the first False Dmitriy? The answer is simple – they wanted to believe in the revival of a possible new Tsar. Moreover, the nobility were scared of riots in the country, while ordinary people were scared of punishment from king supporters. Thus, even people who did not believe that False Dmitriy was the real son of Ivan IV and used their logic to form their opinion, had to keep silent and agree with all what noble people said thus supporting the opinion of the majority. In other words, they were ruled by their emotions, which is vital part of human psychology and cannot be easily controlled all the time. According to this example, I can say that people accept common knowledge usually subconsciously and it does not show the quality and reliability of knowledge, as they do not have any other variant rather than accept the given information and believe in it.

[3] False Dmitry, Russian Pretenders / Written by: The Editors of Encyclopaedia Britannica / britannica.com // Available at: https://www.britannica.com/topic/False-Dmitry (Retrieved 07.02.2019)

Comment

The student starts by limiting the area of knowledge to one of the disciplines within the human sciences—psychology. It is fine to focus on a discipline within an area of knowledge and to use specific examples from that discipline, but remember that it should then be linked back to the wider area of knowledge. The student starts by explaining the idea that when there is already a majority opinion it is easier just to agree with the majority and sometimes people will believe what they want to believe rather than what is a less-tempting alternative. This is a relevant point, but it is not fully focused on TOK; it is possible that the essay is drifting away from the student's plan. The example is not one of knowledge in psychology, but is a behaviour that can be explained through psychology. The point is quite a subtle one and will need a little reflection. You need to be careful not to fall into this trap when using examples. In this case the focus of the example would probably have better being history and explaining why we want to believe something that is believed by others. This argument can be made and does happen in history, although it does not necessarily lead to reliable or accurate knowledge. The idea of some form of "snowball effect" can then be linked to an argument on what is meant by "best measured by the number of people".

EXEMPLARS WITH FEEDBACK

In the previous chapter you saw sections of essays that were very good and were provided to give you some ideas for your plan. To help you further, in this section you can look at some sections of essays where the student's writing has been less successful and has not reached that potential. Five examples have been chosen, one from each area of knowledge, and each example is a whole section of the essay on that area of knowledge. An introduction and a conclusion that are not perfect are also included, so overall there are seven exemplars. You should read each exemplar carefully and after each paragraph make notes on the positives and the negatives. Think of yourself as the teacher helping the student to write a better essay—what would you be advising the student in each case? Then read the commentary on each paragraph, which explains the problems, what needs to change and some ideas on how that change could be made. As in Chapter 5, all the examples are taken from past essays written by students and you will see a variety of styles and also minor errors in grammar, spelling and punctuation.

You should read these examples carefully once you have an initial draft of your essay. The idea is that by reading the mistakes made by others and seeing some of the possible solutions, you will be able to find some of your own errors and fix them before handing in a final draft to your teacher.

Exemplar 1: Natural sciences

Title 1: To what extent do you agree with the claim "The quality of knowledge is best measured by how many people accept it"? Discuss this claim with reference to two areas of knowledge.

The 'quality of knowledge' is subjective, and should first and foremost be defined before the claim is approached. For the purpose of the essay, 'quality of knowledge' will be knowledge which renders as valuable through it providing knowledge that moves a discipline forward in its discovery. As businessman William Stone once said, "Truth will always be truth, regardless of lack of understanding, disbelief or ignorance."[1] This is interesting, as the title implies otherwise: that the quality of knowledge is *best* measured by how *many* people accept it, thereby stating that quantity is of great importance. This only demonstrates the complex nature of the claim, as one's interpretation of words like "measured", and "accept", could vary, leading to different approaches. However, I believe that "accepting" something requires receiving information and believing it, thereby not only acquiring the knowledge, but also rendering it valuable. Although, even that comes with complications—we can't always know the extent to which people's tastes are good indicators of quality. This essay will scrutinize these questions through looking at two different areas of knowledge, History and the Natural Sciences.

[1] W. Clement Stone Quotes," Citatis, accessed January 23, 2019, https://citatis.com/a 1428/33fd7/.

Commentary

The essay gets off to a problematic start by suggesting that the concept of "quality of knowledge" is a simple concept that has a simplistic definition. This is not the case. At this stage it might be sensible to suggest that the quality of knowledge is dependent on the area of knowledge under discussion and that there may be more than one aspect to the concept in each area. In the second sentence the student brings in the idea of a discipline. If the student intends to split the area into disciplines then suggesting this as a way forward is potentially a good idea, but a little more detail on how this will be done would be helpful. The introduction of the concept of truth seems somewhat out of place here as the idea of truth seems disconnected from the essay title itself. The idea of the title implying otherwise is again an unusual way forward as it suggests that the title itself is a perspective. It is often a sound idea to start with some degree of agreement on what the title says. Pointing out that *measured* and *accept* may lead to different interpretations is a fine point and the slightly more detailed unpacking of *acceptance* raises a relevant point. However, there is a rather large hole in the argument—who are the "people"? For example, accepting the title as it stands could assume that you might be more willing to agree if the people were experts in the field rather than just a random selection of people off the street. Finishing the paragraph with a statement of which areas of knowledge are under consideration is fine.

Despite the use of the scientific method being widely accepted nowadays, in the past, evidence was more frequently based on a lack of evidence, and instead formed through common sense, which can be influenced by individuals' backgrounds and perceptions. An example where the rationality behind information was hindered by emotion was the falsified idea of "abiogenesis". This concept, accepted by many,[2] including scientists around the 4th century B.C, was that living matter arose from non-living material. For example, maggots arose from meat, or soil gave rise to frogs.[3] This seemed to explain the presence of organisms; however, the empirical evidence was scarce. Thus, despite the amount of people accepting this knowledge, in the natural sciences it is not valuable unless it satisfies all stages of the scientific method.[4] This knowledge did not move past a simple, unbacked hypothesis—meticulous tests were not undertaken and the knowledge was based on belief rather than rationality. It was not until the 19th century that Louis Pasteur published conclusions about the idea of abiogenesis being fraudulent[5], replacing it with "biogenesis" and thereby putting an end to what had been a heated debate for centuries. This supports that in the natural sciences the best measure is something scientifically proven, backed up by empirical evidence. This raises an interesting question—to what extent do people accept knowledge when it is put forth by scientists? Numerous experiments were carried out, by scientists Redi and Spallanzani[6], to disprove abiogenesis, however none were as successful as Pasteur's. This suggests that the fraudulent knowledge was only contradicted after in-depth research was undertaken, not necessarily due to the scientists themselves. Therefore, what many people consider quality knowledge is subject to change, as people went from believing something to rejecting it with the introduction of successful empirical evidence. Ultimately "quality knowledge" arose when the empirical results were able to falsify the theory.

[2] "-9 Spontaneous generation was an attractive theory to many people, but was ultimately disproven," Through the Microscope, accessed January 23, 2019, https://www.mierobiologytext.com/5th_ed/book/displayarticle/aid/27.

[3] "Spontaneous Generation", Northern Arizona University, accessed January 23, 2019, http://www2.nau.edu/gaud/bio30 /content/spngen.htm.

[4] "How do we acquire knowledge in the natural sciences?," Theory of Knowledge, accessed January 23, 2019, https:/www.theoryofknowledge net/areas-of-knowledge/the-natural-sciences/how-do-we-acquire-knowledge-in-the-natural-sciences/.

[5] "-9 Spontaneous," Through the Microscope.

Commentary

Moving on to the first area of knowledge is a perfectly good way to proceed. However, the statement "evidence was more frequently based on a lack of evidence" does not make sense. The student needs to use a word such as *justification* rather than *evidence* the first time. Even with that change it is not clear how this links to the title.

The example used in this case also has a questionable start because the concept of the scientist was not really in existence in the 4th century, especially in the context of there being any sort of scientific method. The student then moves on to suggest that unless the scientific method is followed, it does not matter about the number of people. This certainly has truth to it but the title is asking about the quality of knowledge and the student has not made the link between evidence and the quality of knowledge. Making this link is necessary for this paragraph to be successful. It is after the discussion on Louis Pasteur that the purpose of the paragraph becomes clearer. This is meant to be a viewpoint on the title in the form of a counterclaim. The student is stating that the quality of scientific knowledge is best measured when it is scientifically proven and backed up by evidence. This has merit, but starting an essay with a counterclaim is an unusual way to begin. It also remains unclear what element of measurement is under discussion. In the discussion the idea of abiogenesis being "fraudulent" is not well expressed. It is known now that this idea is wrong, but at the time of it being proposed there was nothing better. To call it fraudulent suggests there was a deliberate attempt to mislead, which was not the case. The paragraph finishes with the implicit indication that quality of knowledge is about the knowledge being accurate.

This is not a wholly irrelevant paragraph and the overall point made, although lacking clarity, has some merit. However, with a little more thought it could be a lot more effective.

On the other hand, the quality of knowledge is not always limited when many accept it, as it was for the archaic theory of abiogenesis. The Human Genome Project, 1990, was an artificial attempt to detect the entire base sequence of the human genome[7], the entirety of genetic information of an organism. The complete sequence was finalized in 2003, where all of the DNA base pairs were found, enabling scientists to research genetic conditions and treatments. Indeed, the information gained out of the project classified as rather valuable—the knowledge gave us a better understanding of human genetics. Through this widely accepted project[8], scientists were not only able to find a prototypical representation of the human genome, they were able to find what genes coded for proteins, which had been a primary goal of the project. Its aim was to explore the core of humanity, and it was also able to successfully do this. The project also led to advances in genetic technology, valuable for genetic modifications and scientific uses. Additionally, it benefitted biomedical research to a large extent – it enabled scientists to find the genes related to genetic conditions, such as cancer, improving medicine and diagnosis.[9] That it was accepted by many was evident in that the project gained the coordination of numerous countries, as well as the National Institutes of Health, implying that it had general acceptance and funding.[10] After having looked at two examples, which both demonstrate wide acceptance, it becomes clear that what distinguished this knowledge as quality from the previous example, even though both were widely accepted, was the empirical evidence by which it was backed up throughout, proving its rationality. The project showed that quality knowledge can sometimes be acquired by many people, and still classify as true knowledge. It demonstrates that the role of reasoning is significant in the process of acquiring quality knowledge and that proof supports acceptance.

[7]Francis S. Collis and Monique K. Mansoura, "The Human Genome Project," Wiley Online Library, last modified January 4, 2001, accessed January 23, 2019, https:/onlinelibrary.wiley.com/doi/full/10.1002/1097-0142%2820010101%2991%3A1%2B%3C221%3A%3AAID-CNCR8%3E3.0.CO%3B2-9.

[8]Aristides Patrinos, Charles Delis, and David J. Galas, "Notes from a Revolution: Lessons from the Human Genome Project," Issues in Science and Technology, accessed January 23, 2019, https:/issues.org/notes-from-a-revolution-lessons-from-the-human-genome-project/.

[9] Collins and Mansoura, "The Human", Wiley Online Library.

[10]"Who was involved in the Human Genome Project?" yourgenome.org?, accessed January 24, 2019, https://www.yourgenome.org/stories/who-was-involved-in-the-human-genome-project.

Commentary

The student starts this third paragraph with what you would expect to be a different viewpoint from the claim itself, but as that has already happened in the preceding paragraph this looks unlikely. At the start of the third paragraph there is no clear way indicated for this to move forward. The summary of the example of the human genome project is fine, but by half-way through the paragraph there is no clearer indication of the purpose of the example. By the end it becomes clear that it is meant to be an example of a piece of science that was "accepted by many" and had "general acceptance and funding". Although relevant, there is no attempt to examine this closely. In the end this paragraph becomes a very general example that is relevant to the title but does not succeed in pushing forward the arguments. At the end there is a brief reflection on quality of knowledge (that is, knowledge has quality if it is backed up by empirical evidence) and it seems to be suggested that it is linked to truth and also to reasoning—the student makes mention of both terms at the end, but no indication is given to the role of either. This all needs to be unpacked and at least some of it explored before the example is given, in order to establish why the example is there. For this example to be successful there needs to be much clearer signage of what it is exemplifying.

Exemplar 2: The arts

Title 1: To what extent do you agree with the claim "The quality of knowledge is best measured by how many people accept it"? Discuss this claim with reference to two areas of knowledge.

On one hand, if art is approved upon it is considered better quality. This means that in art quality is measured by how many people accept it rather than through technique. An example of this is Banksy's art piece for the royal academy's summer exhibition in London 2018. Banksy here submitted an art piece under the pseudonym "Bryan S Jackman" and this got rejected at first ("Banksy Artwork Rejected for Royal Academy Summer Exhibition."). Banksy then posted it on Instagram and got over 200000 positive reactions online, leading to the piece being exhibited at the royal academy's yearly summer exhibition. This example highlights how the quality of knowledge in art is decided upon through the acceptance of the majority. It shows how the curators and the committee consisting of Cornelia Parker and Phylida Barlow did not think of this work as high quality, however when the majority decided it and gained a lot of attention the piece was suddenly of high quality ("Banksy Artwork Rejected for Royal Academy Summer Exhibition."). Additionally, Banksy was rejected under his Pseudonym Bryan S Gaakman, which he used to submit the work at first. Nonetheless, after Banksy exposed it was him who created the piece, the academy suddenly saw a better quality in the art piece. This highlights how Banksy's reputation and status in the art world also played a role, to add to the quality of his work. This does not only highlight how people's opinion creates the quality of art but also how an artists reputation can establish the quality of a piece. Therefore in arts, the quality of knowledge is especially decided by its value in society, which is decided through the people's opinion and the liking in shared knowledge.

Commentary

In this section of the essay the student tries to provide an example that the number of people is a possible signifier, and shows thought by suggesting this is a different consideration from technique. There is a description of an example from Banksy, which is in an appropppriate amount of detail. The student then goes on to say that this example as it stands "highlights how the quality of knowledge in art is decided on through the acceptance of the majority". Certainly the example suggests ideas about the statement, but to suggest it does all of this on its own is at best naïve. The idea that two curators of a major art exhibition reject a work with the implication that this is in part due to the name under which it is submitted, which is then turned around by the public once the fame of the artist is known, is certainly a relevant point for evaluation and analysis in the essay. However, not much is done with it. The idea that the "academy suddenly saw a better quality in the art piece" needs to be explained and explored further. Hints are given when reference is made to reputation, but it needs to go further than this. As a reader you are never quite clear about what aspect of knowledge is under discussion.

On the other hand, the quality of art is not measured by the acceptance of art but by the quality of the technique. Van Gogh's visual art is an example of this due to the fact that during his life period his art was neither valued nor accepted but then rediscovered by the later population due to its technique. "Most critics outrightly dismissed his works as amateur, and some even went as far as to say that is was 'strange, intense and feverish'"(Job). The example highlights how here the quality is not measured by the acceptance of people but by the quality of the fine technique that was used. Van Gogh is only one of the examples of artists that were rejected during their lifetime but later accepted. Another example is Picasso who through his new ideas of abstractism Picasso's art was not accepted at first and not liked by his people. An example of a critic was Carl Jung a Swiss psychiatrist who said his work was schizophrenic and even satanic. Carl Jung said, "as to the future Picasso, I would rather not try my hand at prophecy, for this inner adventure is a hazardous affair and can lead at any moment to a standstill or to a catastrophic bursting asunder of the conjoined opposites,"(Job). It shows how disliked Picasso's work was when he was still considered an amateur, and that his art like Van Gogh's, was only later accepted by the majority due to his unique new technique. These examples highlight how arts quality here is not decided upon through the liking and acceptance of people but the actual quality and the technique of the artworks. Evaluating the weight of the claim and counterclaim one can see that generally, the acceptance of knowledge establishes it's quality for society and so is the stronger argument. However, the quality of art is still to be interpreted by a single person due to art also being connected to emotions.

Job, Rita, et al. "7 Masterpieces Rejected By Art Critics." Agora Gallery - Advice Blog, 5 Mar. 2018, www.agora-gallery.com/ advice/blog/2017 /02 /23 /art-criticism-masterpieces/.

Commentary

The student moves on to create the viewpoint of a counterclaim. This is fine, but it does not need to consist of 50% of the attention given to the area of knowledge and, as was intimated at the start of the section, the counterclaim is about technique. Van Gogh is given as the example, with the idea that his work was neither "valued nor accepted" during his life but was then rediscovered by the population. There is a degree of truth to this and also a degree of relevance, but unfortunately it does not go far enough. The link between artisitic technique and artistic knowledge needs to be established. The student then leaves the van Gogh example for a Picasso example. Having two examples back to back is not usually a good idea unless it is clear that they are both needed in order to show different aspects of the point under discission. The quote made by Jung does not work well in this extract as it is not directly linked to Picasso as an artist. Furthermore, the student states that the quote shows that Picasso was

disliked as an amateur painter—but the quote does not suggest this. In this case a single more developed answer, with an example, would have worked better.

The student works towards a mini conclusion with links back to the idea of quality—however, there is still no indication of what is meant by quality in this area of the arts. The last sentence offers a tantalizing possibility, but no justification is provided either here or later in the essay.

Exemplar 3: History

Title 1: To what extent do you agree with the claim "The quality of knowledge is best measured by how many people accept it"? Discuss this claim with reference to two areas of knowledge.

Although this may be the case in Physics, it is important to evaluate another area of knowledge to Physics compare to. In history, the truth cannot be found as easily, making it difficult for people to widely accept ideas. In my history class, my teacher gave us readings that elaborated on Mao Zedong and his Great Leap Forward. They showed how People's Communes had a large increase in both industrial and agricultural production. However, Mao Zedong enforced large increases, leading to People's Communes communicating how they produced more than they actually did, meaning that the government collected more as if the People's Communes had enough food to survive. This and the pressure causing the cooperatives to use bad techniques led to less food being produced and useless waste of material. However, China at the time was communist, so they were able to utilize censorship. So how did any knowledge flow outside of the country? I asked this question to my history teacher, and she wondered the same thing. How did the readings have knowledge about what was true? It was well known that this happened, but how accurate can this be?

If China was able to use censorship and propaganda, then the reading's information may be inaccurate as China may have inflated their numbers to make themselves appear better. We use this information to support the radicalism Mao had and the events that followed the Great Leap Forward. However, it is difficult to know what is true and what is speculation or the result of censorship. This directly affects the amount of people that believe in something because bias is more opinionated and varies from other perspectives.

Commentary

From the start it is clear that history is being used as a contrast to the natural sciences, in particular the discipline of physics. Almost immediately an example is given, but with no indication of its role. The example looks at the rule of Mao Zedong in terms of economic output and the idea that during this period various amounts of data linked to economic output were withheld or manipulated. The point being made is that if China was so good at withholding and fabricating information at the time, how can we trust that data when it comes to considering it historically? No answer is given to this and no attempt is made to look at what history texts, historical knowledge or historians have to say about it. The example has the potential to work, but it needs to be flagged with a reason for using it and it needs to be explicitly linked back to history and historical knowledge. With the exception of the final sentence, none of the key words from the title are mentioned, so in its current form this adds little to the essay.

For people to better understand History, they need to physically learn the content behind a country or an event to understand it better. In order to recall these events after they are learned, people use memory. With this, any sort of bias in the way we learn this content can heavily influence our perception of how we view the world. I conducted my IB History of the Americas Internal Assessment on the Soviet Union and Joseph Stalin's five year plan. I discovered that the main drive of this plan was to endure an economic reconstruction, which helps the people, builds the country's strength, and enhances the dictators power. However, people at the time didn't know Stalin was doing this to consolidate power, but more so to rebuild the country after World War I, Stalin used propaganda to have people follow him even though working conditions were bad. Stalin made himself appear differently than how he should have been seen. This influence has been passed down to further generations teaching kids censored information about Stalin, showing how he is only good rather than elaborating on all that he has done wrong in social rights. This knowledge, the only knowledge, would then be considered to be the highest quality of knowledge to the children. But a person who understands the whole scope of an event then would have a higher quality of knowledge relative to the less-knowledgeable children.

Commentary

The student then considers the role of memory within history and the idea of bias. However, any form of link to bias seems unrelated to the essay title. The student uses Stalin's five-year plan as an example. The emphasis is that the way this was presented to the people of the USSR was different from Stalin's own beliefs. It is suggested that this continued to future generations. A tentative link is made here to the quality of knowledge but it is unconvincing. For this to be effective it needs to be discussed from a historical perspective with an understanding of what history has to say about it. The idea of the knowledge being best measured by the number of people who accept it might have been helped here by a consideration of who the "people" are.

Exemplar 4: Human sciences

Title 2: To what extent do the concepts that we use shape the conclusions we reach? Explore this question with reference to two areas of knowledge.

Unlike mathematics, the application of a different conceptual framework in the human sciences can drastically alter the conclusions reached. I noticed a pertinent example during my studies of IB Anthropology. During the 1990s, Philippe Bourgois spent several years researching crack dealers in Spanish Harlem, New York, which culminated with *In Search of Respect*. Bourgois' ethnography utilises the theoretical framework of structural analysis, which "explain[s] social behaviour and institutions by reference to *relations* among such concrete entities as persons and organisation."[2] His knowledge framework utilises concepts such as social marginalisation, structural violence, and internalised violence.[3] This can be contrasted with Oscar Lewis' *La Vida*, which examined Spanish Harlem during the 1960s using a "psychologically reductionist"[4] theoretical framework. Lewis' theoretical framework was built of agency-centred concepts, which emphasise an individual's capacity to make change. Lewis developed the 'culture of poverty' theory and he concluded

that poverty was maintained by socialisation through kinship groups.[5] Conversely, Bourgois' concluded that the underclass' agency was grossly mitigated by structural constraints, which acted to marginalise them and furthermore socialisation was instigated more by structural institutions, such as schools, than kinship groups.[6] The difference in conclusions arose from Lewis not considering structural concepts.[7]

[2] Mark Granovetter, Structural Analysis in the Social Sciences, *In Search of Respect: Selling Crack in El Barrio*, by Philippe Bourgois (Cambridge: Cambridge University Press, 2003), v.

[3] Philippe Bourgois, *In Search of Respect: Selling Crack in El Barrio* (Cambridge: Cambridge University Press, 2003)

[4] Ibid

[5] Ibid

[6] Ibid

[7] Ibid

Commentary

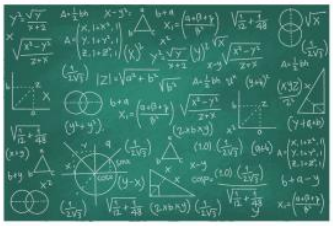
The student is using the human sciences in contrast to mathematics. In this case the student starts with an example from one of the disciplines of the human sciences—anthropology. In this case anthropology is used as an exemplar human science; this needs to be highlighted clearly, as has been done in this essay. Starting with the example can be problematic, as it often leads to description and to making the reader do the work. However, that is not the case here; in this section the student is contrasting an anthropological perspective with a psychological perspective and is setting up an argument by contrasting the two examples. This is a thoughtful way of elaborating on the essay title and it is highly effective. However, it needs to be done with care and thought, otherwise there is the potential for the writing simply to consist of two descriptive examples.

A separate [point] which arose from the above example is to what extent ethics, which is important to many theoretical frameworks in the human sciences, such as post-modernism, shape the conclusions that we reach? Ethical concerns have in many cases discouraged academics from examining contentious issues over the fear that their representation of a marginalised group may result in negative consequences for the subjects of study, which is based around the concept of politics of representation. Furthermore, when some study controversial issues they refrain from making their conclusions into shared knowledge over the fear of negative repercussions for marginalised groups. Bourgois claims the dearth of discourse on poverty on that "the U.S. common sense ... blames victims for their failures and offers only individualistic psychologically rooted solutions to structural contradictions."[8] Hence ethical concepts can prevent conclusions being taken from the realm of personal knowledge to shared knowledge.

[8] Ibid

Commentary

The student now takes the argument further by taking an ethical point of view. It is always worth remembering that using the four lenses of scope, perspective, methods and tools, and ethics are potentially good ways of giving different approaches to the essay. The student appears to set this up through the idea of a post-modern perspective, which would be fine if there were at the very least some indication of what that might be. For this to be fully effective the idea would need to be further explored. The student then moves on to looking specifically at how the ethical concerns affect the conclusion reached and what happens to those conclusions. The reference back to the previous example works well—this is not a major paragraph so the point can be exemplified without having to set up a whole new example, which can be a relatively lengthy process.



Exemplar 5: Mathematics

Title 3: In mathematics and the natural sciences does the production of knowledge require accepting conclusions that go beyond the evidence for them?

Mathematics, the area of knowledge which concerns itself particularly in the relations between abstract concepts and symbols, bases itself on axioms. Through axioms, Mathematics is able to deduc any other statement or any other concept that can be seen as a restatement, or derivation, of its own axioms. Mathematics produces knowledge through theorems; theorems are provable, through known mathematical operations in a given system of axioms, and valid statements that embody a general principle; the process of showing a theorem as correct is called a proof, which in itself bases itself on reason. Due to Mathematics' nature, proofs are the way its system observes and rejects uncertainty in calculations, since its relationship to reason allows it a deductive, and thus a certain, validity that does not have a need for the aforementioned uncertainty. A query that arises, however, is that if Mathematics isn't a system created by humans (that thus suffers from human limitations), then it could be possible the axioms of mathematics would be able to account for all phenomena, or systems or abstractions, which would also account for its own existence. However this is far from conclusive, as it's debatable whether mathematics is human or natural, and mathematics might even still be limited to the human's ability to process data.

Commentary

The student starts with a straight-forward statement about the basis of mathematics in terms of axioms. The idea that mathematics can build on these axioms to create theorems is accurate, and the point that axioms are provable through proof based on reason is an effective description. The following link to certainty and to proof shows a genuine understanding of the topic. It would have been good to see a little more on what exactly constitutes an axiom to make the link to why it is at the base. However, this is only a minor worry and overall this would be counted as a strong start to the essay. It then moves off to implicitly suggest that the "invented versus discovered" argument has a role to play here. This is well handled: it shows the student is aware of the possibility, but it is then shut down effectively. The student has created an introduction to mathematics as an area of knowledge that is clear, has a direction and is not side-tracked by other arguments, while still acknowledging that those arguments remain in the background.

The systematic limitations are even clearer in Mathematics; systematic limitations demonstrate that there is a need for a 'basis' for Mathematics (and the Natural Sciences) to produce knowledge. Mathematics utilizes axioms. Axioms are the literal embodiment of 'conclusions that go beyond the evidence for them', with the term being defined by Numberphile as "the things we believe that are the way numbers [and] geometry works"(Numberphile, 2017) The key word is "believe", and the implication that no evidence is needed, which remits to the fact that axioms, while they can be highly selective and highly general, which can allow for a plethora of abstractions through the logical deductions that can follow; can never truly grasp all of what can be 'true' (anything that could possibly be Mathematically valid). This was evidenced in Gödels incompleteness theorem, which, according to Numberphile, demonstrates that there will always be a statement that cannot be proven by the given axioms at hand (Numberphile 2017). It was even shown to be present in Peano Arithmetic. This allows us to see that, though human deduction from very carefully chosen axioms has, like in the real world, lead to an almost innumerable amount of mathematical theorems, it is inherently limited. This inherent limitation in human reasoning, ability of abstraction, demonstrates that even with axioms, which are by their own definition 'conclusion which go beyond the evidence for themselves', need to also be recounted as not showing the entirety of what can be 'true', and thus require a conclusion of Mathematics being able to describe the (humanly) processable and abstractable universe, even though Mathematics itself proved that it is not the case. Diversely, one could also argue that axioms are able to be represented in the real world, in conjunction with the theory of Mathematics being discovered, that just finding the axioms would be the production of knowledge, and that wouldn't need any conclusions that go beyond the evidence for themselves; this would also pose the question of whether conclusions would even need evidence themselves to be considered valid.

Numberphile (2017) Godel's Incompleteness Theorem - Numberphile (31 /05/17) Numberphile

Commentary

The student starts this next section with a more formal definition of what is meant by an axiom. However, the definitions, although valid, are possibly not the most suitable given that the student is trying to establish exactly what constitutes the base for mathematics. When using formal definitions there is often a range in terms of what you can use. Choose the one that allows you to say what you want to say—but this is not to say that you can make up anything you want and then use that! The student also notes that there is some form of distinction between truth and validity, but if that is going to be used then it needs to be explained—at the moment it is presented as a plain statement with no indication of the role it plays. The student then goes on to mention both Gödel's incompleteness theorem and Peano's axioms. This could be seen as a case of name-dropping. Both are correct examples but without at least a sentence of explanation they add very little to the essay. In this case it would probably have been better if the student had chosen one example and at the very least provided a one-sentence explanation of it. The idea that axioms provide a degree of limitation, as does the facility of human reasoning, is a good one and the student shows understanding of it. However, it is neither concise nor fully effective. This is a case where a carefully chosen two-sentence example could explain things much more clearly. To finish off, consideration is given to the extent to which axioms are themselves knowledge and hence there would be no conclusions. From a philosophical perspective this has interesting possibilities but from a TOK perspective it is less effective. All the mathematics talked about at high school is based on axioms, but is then proved by logic, so the amount of knowledge we have in the axioms themselves is not really relevant to most students when considering the subject they are taught.

Exemplar 6: Introduction

Title 2: To what extent do the concepts that we use shape the conclusions that we reach? Explore this question with reference to two areas of knowledge.

Concepts are undoubtably important to the knowledge framework of many disciplines, and hence the conclusions we reach, whether it be structural violence in anthropology, calculus in mathematics, or symbolism in the arts. I will explore this question with respect to two areas of knowledge: mathematics and the human sciences. I will first consider the nature of a concept and whether a knowledge framework can function without concepts. Then I will consider if methodology is more significant in the knowledge framework than concepts. I will finally consider whether concepts are abstract objects or mental representations and how this might shape conclusions.

Commentary

The idea of the first sentence is clear, with the student giving a direct indication of where the essay might head. This is done successfully—it indicates the way forward without trying to give simplistic definitions that are inappropriate for TOK and the examples are specific enough at this stage to make the reader think. However, there are two ways in which this introduction could possibly be improved. If the student wants to use disciplines then there should be an explicit link between these and areas of knowledge. Also, it might have been better had the student only taken examples from two disciplines, as only two areas of knowledge can be discussed in the essay. Then three different ideas related to concepts are noted. Two of them are about meaning and one is about a possible counterclaim. This definitely shows signs of thinking about different aspects of the question and there is an indication that the treatment of the title is going to be a TOK essay. However, it might have been better if the student had used three statements about the interpretation of the key word *concepts*, which would have given a more coherent beginning and would have provided a base for exploring the key word as the writer went along. This is not a bad introduction, but it is always worth noting how it could be better—in a TOK essay you are not aiming to write the perfect piece of work, but producing something as good as possible should always be your aim.

To answer this question, we must grapple with the question of what constitutes a 'concept'. The notion that concepts are the language used to label knowledge is a helpful start. However language often does more than simply labelling unspoken knowledge, indeed it can compose knowledge. Take differentiation in mathematics; my learning of differentiation would have been implausible without the understanding of a myriad of concepts, such as polynomial functions. Hence, concepts are important to the knowledge framework of mathematics as they act as building blocks to further knowledge. One could argue the development of knowledge using proven concepts through reason demonstrates that concepts do to a certain extent shape the conclusions that we reach as they are the foundations from which we develop conclusions. Moreover, the methodology relies upon proven concepts to prove further concepts. Examination of another concept from mathematics, integration, supports this point. The conclusion, integration, could only be developed and proven with cartesian planes. Hence, in mathematics, concepts and methodology are interconnected; concepts exist as both a consequence of the knowledge framework whilst also being an integral part of it.

Commentary

The student follows on from the beginning with further thoughts on the idea of a concept. This begins with the idea of labelling. The student immediately moves into the area of knowledge of mathematics and attempts a specific example that highlights precisely what is meant. The student then suggests it is more than this (although the reason for this is not given) and then that methodologically mathematics is actually a hierarchy of concepts, which is definitely one way of seeing this. Thus it is clear that for this student, concepts are central to mathematics and that building on them, sometimes repeatedly, is necessary. Again, what has been written is a good follow-up to the initial paragraph and demonstrates some good TOK thinking. However, the gateway set up in paragraph one is not exploited—with a little thought the two paragraphs could have been better connected, possibly with some of the abstract ideas in mathematics being presented as explicitly linked to concepts.

Exemplar 7: Conclusion

Title 2: To what extent do the concepts that we use shape the conclusions we reach? Explore this question with reference to two areas of knowledge.

Though concepts can sometimes hinder our shaping of conclusions, I think concepts' primary advantage is that they can create more affirmed and elaborate conclusions through triangulation using concepts from more than just one area of knowledge. So, how can concepts link across disciplines and across areas of knowledge? … [W]hen analyzing literature, drawing a conclusion about the theme of a novel may not be as simple as reading the text. Using concepts in history about the influence of an author's traits and circumstances on his or her work can greatly add to an understanding of the work. Zora Neale Hurston's *Their Eyes Were Watching God* exemplifies this claim well; analyzing how her past in pre-Civil Rights America is connected to her writing about the South greatly helps to shape more precise conclusions from her novel. Hence, a useful asset to concepts is that they can link knowledge across areas of knowledge to shape a complex conclusion. It must be noted, however, that concepts can only be linked together to the extent that the areas of knowledge from which they originate *agree*.
Zora Neale Hurston (1937) *Their Eyes Were Watching God*

Commentary

The essay is focused on concepts throughout. To tie the essay together the student has decided to discuss the idea that there is a link of concepts over areas of knowledge. The two areas of knowledge chosen are the arts and history, which are the same focus as the rest of the essay. It is suggested that a degree of historical accuracy can be helpful in literature, but precisely why is never really analysed. This idea of tying the essay together before giving the final concluding paragraph can be an effective technique, but in this case it does not quite succeed. The reader needs to be told (or reminded) which concepts are under discussion, what the link is and how it is beneficial.

The title suggests that the concepts that we use shape the conclusions that we reach, which is correct; concepts shape the conclusions that we reach to a tremendous extent. Though they vary in structure and in execution across areas of knowledge, they serve as a framework for organizing, understanding, and utilizing existing information so that it shaped into acute conclusions. Without concepts, the shaping of conclusions would rely on large clusters of knowledge without a sense of organization or direction. The only caveats with concepts are that concepts change over time, so we must be wary when assessing the validity of conclusions drawn from newborn concepts, and concepts can be misapplied or confined, which limits the accuracy and potential for shaping conclusions. Though many factors go into shaping conclusions besides the sole use of concepts, concepts make it easier to communicate knowledge because a common set of … concepts allows synthesis of information, turning personal knowledge into shared knowledge. Overall, concepts shape the conclusions that we reach to the extent that they underlie our thinking patterns without overpowering them; they serve as our guidelines for thinking, allowing us to constantly shape new, acute conclusions.

Commentary

As the paragraph before was in effect part of the conclusion, this final paragraph should show a direct link to it. Unfortunately, the link has been left out so not much benefit has been gained from including that earlier paragraph. In this final concluding paragraph there is an attempt to summarize what has been said. This includes the idea of framework and a number things to which that framework applies—organization, understanding and utilization. This is an effective summary. The student then goes on to mention when it might not work so well, addressing the idea that concepts have to be open to change and so we need to be careful in matching them up. It is also noted that many factors go into shaping conclusions, but no indication is given here as to what those factors are. At the very least it would be a good idea for there to be a reminder. The last line about concepts underlying without overpowering our thinking is quite a good way to end. For this to be a fully effective conclusion there needs to be a little more detail and it could also note one or two more ideas that have not wholly worked in the main body. This is an adequate and reasonably thoughtful conclusion which with a little more work could become insightful and convincing.

EXEMPLAR ESSAYS

The section above should be used to reflect on what you have written as your initial draft and it is likely that you may want to make some changes. Once you have made those changes, you will have a final draft that needs to be handed to your teacher for feedback.

When you receive your feedback you should read it carefully and reflect on what needs to be changed. There is nothing to stop you going back to an earlier section in this chapter, or even an earlier chapter, to gain more ideas or look for further explanation or advice. However, if the advice from your teacher suggests that with the exception of some minor rethinking your essay is close to complete, then it is suggested you undertake a final activity.

In this activity you look at two complete essays and think about how they compare to what you have written. Both of these essays scored very highly. Once you have read them, make some notes on why you think they achieved high scores. Then read the commentaries on the essays and compare what you have said with the commentary.

The two essay titles considered here are as follows.

Essay 1: Why is the knower's perspective an essential attribute when pursuing knowledge in the natural sciences and history?

Essay 2: To what extent does the application of knowledge in mathematics and the arts increase its value?

Both of these essays can be described as excellent, but they have been chosen because they are not perfect. Obviously, a range of essays can score full marks and the top full-scoring essays are quite exceptional. However, by definition only a very small number of you will ever be able to attain this. This is why for this activity two solid essays have been chosen that while still described as excellent also contain flaws. Most essays that score ten out of ten are neither flawless nor perfect.

Having read these two excellent essays and reflected on them, put your thoughts together with what your teacher has said, and then make the final changes to your essay. This is the end of the essay-writing process—the essay you now have is the essay that will be submitted to the IB for marking.

Exemplar essay 1

Why is the knower's perspective an essential attribute when pursuing knowledge in the natural sciences and history?

In the process of pursuing knowledge, we often need to determine what factors might be helping or hindering that search. This takes the form of the question "To what extent is the knower's perspective essential in the pursuit of knowledge?" The perspective from which each individual approaches the world is built up throughout a lifetime of experiences, and the process of new encounters and experiences becoming knowledge is inseparable from the perspective existing in the person's mind. This relationship between knowledge and perspective automatically has an effect on the knower's pursuit of knowledge, so it is difficult to determine whether they could have learned the same thing without their individual perspective. Within a particular field, much of the perspective influencing the pursuit of knowledge comes from the individuals existing knowledge in or views on the area. The disciplines discussed in this essay will be natural science and history. Situations in these areas where pursuing knowledge would be impossible without the knower's perspective, as well as situations where perspective is not at all involved, can both be identified. Considering examples of both circumstances leads to the conclusion that the perspective of the knower is a factor that is only situationally essential to the pursuit of knowledge.

Natural science is an area in which perspective is less evident in the finished product of knowledge, but it is often essential in the pursuit of arriving at that point. Scientific conclusions are linked in part to reason and sense perception in the form of observation, but these are influenced by the emotions of the scientist—this

is where perspective comes in. The pursuit of knowledge in natural science occurs through experimentation, motivated by personal investment. The levels of investment vary, from working to cure a disease affecting a family member to vague curiosity in an observed phenomenon, but is convincing enough for them to want an answer. It would be impossible to pursue scientific knowledge if individual knower's perspectives didn't provide reasons to search for it. In the professional science world, perspective is also involved between various knowers. This interaction is apparent in the process of defending a thesis to a committee – the scientist must be confident in his perspective to be successful in the pursuit of classifying his results as knowledge.[1] Additionally, before an experiment can be carried out in a research laboratory, the scientist must justify the processes, resources, and necessity of the results in a proposal to be subjected to other scientists' perspectives. I experienced this firsthand this summer, where weekly meetings in the lab I worked in included debates over whether someone's idea for a new experiment was valid. These discussions perfectly exemplified the perspective that influenced the researcher to want to pursue knowledge by carrying out the experiment being challenged by the perspectives of the scientific community, in order to filter the overall scientific knowledge coming into existence down to that which is useful before its pursuit even begins.

Though the natural sciences require the drive of individual knower's perspectives, the actual pursuit of that knowledge is separate from perspective. This is especially true in the periods of what Thomas Kuhn labels "normal science"[2]—scientists aren't trying to disprove any existing theories and widely share one perspective, therefore the scientific method constituting the actual production of knowledge is subject to primarily observation and recording, and that shared perspective becomes increasingly irrelevant. The highly regulated process of the scientific method is designed to promote repeatability, preventing any influence towards certain results that could come from the perspective leading the scientist to perform the experiment. Accidental results are an example of this lack of perspective—the sildenafil citrate medication, better known as Viagra, was initially created for treatment of chest pain, but had very different results in clinical trials[3]. The knowledge of how to deal with male impotency was therefore developed completely without any knower's perspective influencing it. This divide between scientist's goals and the conclusions they come to is further summarized by Simon Singh's arguments[4] about the pursuit of scientific knowledge—"People start off with a belief and a prejudice … the job of science is to set that aside to get to the truth." Singh disparages "common sense" in the field and maintains that it is only by presenting coherent observations, free from interpretation, that scientific knowledge can be pursued, acquired, and shared. The interpretation of results is where many perspectives often come in, as in the case of global warming. Scientific measurements qualify as knowledge and demonstrate clearly the higher temperatures of today's world. Taking these measurements was pursuing this knowledge, and it is only in the interpretation of their cause that perspective can change how knowledge is formed.

When considering the study of history, the knower's perspective is closely integrated into the existence of knowledge. The pursuit of historical knowledge entails working with assertions about past events to determine, from that knower's perspective, which cover all the meaningful aspects[5]. An example is the consolidation of knowledge into a form such as a textbook. In our TOK class, we attempted this type of editing, working in groups to shorten a transcript from the Nuremberg Trials. In combining the individual perspectives of our group, the knowledge we had pursued and produced was a solution, but left out key aspects that might be more applicable depending on what knowledge the recipient attempted to use it to pursue. A huge part of pursuing historical knowledge is coming to individual conclusions based on how

information evaluated from different sides influences our perspective. Our most recent practice Paper 2 in history asked, "To what extent was the War Guilt Clause justified?" This required consideration of sources we'd studied in favor of Germany's innocence and those condemning its guilt and interpreting these through our own perspectives. In this case, perspective can be self-serving in the pursuit of knowledge, as in the test setting it was prudent to choose the argument for which a better essay could be written regardless of personal belief. Additionally, the wide variety of perspectives the class held on the issue parallels the ambiguity of any historical assertion based on the number of knower's perspectives that come into play in between an event occurring and you as a knower pursuing it as knowledge; in cases such as this, perspective does seem to be essential in the pursuit of knowledge.

Counteracting this symbiosis between the knower's perspective and the pursuit of historical knowledge, once these complex events are boiled down to "facts", perspective is non-essential in allowing a historian to evaluate them. Over time, events take on specific historical meaning, which is essentially reality since any alternative argument has become a radical perspective and is likely not well-supported. We looked at this process in TOK when evaluating various historian's perspectives on the Holocaust. Most examples, while expressing varying views on German anti-Semitism[6], did not need to back up the argument that the Nazis were responsible for murdering millions. The exception was the perspective of Holocaust denier David Irving. Because his view was outside the accepted reality, the argument had to consist of compiled evidence to convince readers attempting to pursue knowledge via his work. The process of events coming to hold consistent meaning is the reason we can have vocabulary tests in history with agreed-upon definitions. Essentially, the majority of historians come to share the same perspective, which is integrally associated with the information and cannot be considered an individual necessity for the knower. A second method of pursuit of historical knowledge working to eradicate the impact of individual perspectives is the consideration of multiple sources, often contradictory. When a knower is pursuing a conclusion regarding the past, they are attempting to evaluate reality, rather than searching for perspectives supporting their own. In situations where no agreed-upon truth exists, counterarguments become essential in presenting knowledge, and these perspectives must be equally considered in the pursuit of an individual knower's own knowledge. Illustrating this idea is that pursuing knowledge through in-depth research can often change the knower's perspective completely. When I began my extended essay evaluating the extent to which Napoleon's domestic policies were responsible for France's global position at the start of the 19th century, I expected to find that Napoleon was almost solely responsible. As I pursued knowledge of the answer to this question with my research, I was surprised that my perspective changed completely to the final argument that France's strength in the post-Napoleonic era was in spite of what he had done to weaken the country domestically. My initial perspective was completely disregarded in the process, concreting the argument that the knower's perspective is not always essential in the pursuit of historical knowledge.

These opposing arguments on whether the knower's perspective is essential or not at all involved in the pursuit of knowledge demonstrate the coexistence of the different situations. In the natural sciences, ideas are by necessity fueled and brought into existence by the knower's perspective, while the actual pursuit of knowledge in the form of experimental discovery is observational and less determined by biases. In history, the relation of historical events to other knowers is defined by the perspectives of previous knowers, but ideally when a knower pursues a historical conclusion their knowledge comes from consideration of the information they have and therefore perspective is shaped by the pursuit of knowledge rather than the other way around. The differences in ways that perspective can play into both of these areas answers the question

with the conclusion that the knower's perspective is only sometimes, dependent on the situation, essential in the pursuit of knowledge.

1 'Scientists and their emotions: the highs ... and the lows'. Ewan Bimey, The Observer, Saturday 9 February 2012 http://www.guardian.co.uk/science/2013/feb1/10/scientists-emotions-highs-lows

2 'How Does Science Add to Knowledge?' *The Examined Life*. 1 Sept 1998. Television

3 Viagra: The Little Blue Pill That Could. Jacque Wilson. March 27, 2013. http://www.cnn.com/2013/03/27/health/viagra-anniversary-timeline/index.html

4 Author Simon Singh Puts Up a Fight in the War on Science. Robert Capps, August 30, 2010. http://www.wired com/magazine/2010/08/mf_qa_singh/

5 Carl L. Becker. What Are Historical Facts? In *The Western Political Quarterly*, VIII, 3 (September 1955), p. 327–40.

6 The Verdict of Historians. McDonough, Frank. *Hitler and Nazi Germany*. Cambridge University Press. 2001.

Commentary

The essay starts out by noting that the knower's perspective is built into the pursuit of knowledge and that there is no way to dislocate personal knowledge completely. The student implies that by definition all the knowledge we know personally is influenced by the knower's perspective; it influences everything we do. However, there is a question about the extent of this and the generality in the title is noted in the word *pursuing*. Potentially this includes how knowledge is acquired, how it is used and processed, and how it is produced. Hence there is a very clear position given on the title and it is then stated which areas of knowledge are going to be under discussion—why the student incorrectly calls them disciplines rather than areas of knowledge is not fully clear. Then the essay notes that cases of where the knower's perspective is and is not needed will be explored. In one sense this contradicts the definitive opening statement; it is not clear whether this is a little confused and a slightly different approach to the essay will be taken, or whether it is just an acknowledgement that different perspectives need to be considered. While this remains a good introduction there is still more work necessary to ensure that it does the best job possible.

The student then moves on to the natural sciences and immediately suggests that the knower's perspective influences the process but not necessarily the final result. The reason for this is that there is a role for emotion that interacts with sense-perception and reason, which are both used in the production of scientific knowledge. This starts with the idea that there must be a reason to search for something, from very personal reasons through to professional reasons, and then moves on to look at how this works at different stages. The student gives a personal example where scientists are required to give views on different proposals for moving forward in a way such that, as far as possible, the right way is chosen. This suggests that checks and balances need to be in place, almost before the full scientific process is used.

The student then moves on to discuss how Thomas Kuhn's theories on paradigm affect this argument. It is suggested that at the most stable part of Kuhn's cycle the idea of perspective does not really have a role to play. This is further backed up by the idea of gaining results by accident—and giving the example of Viagra is fine. The quote from Simon Singh is further justification of this point of view. The paragraph concludes that it is in the interpretation stage when individual perspectives begin to have a role to play. This is a true statement in relation to the Simon Singh quote, but potentially it is always true. There is thought and understanding in the essay so far, but there is some lack of clarity in exactly what is meant. Finishing the paragraph with a discussion about global warming is possibly not the most effective move. It feels as if the student is trying to put together a carefully thought-through argument about when a knower's perspective is and is not needed, but that parts are left behind.

The student then moves on to history, suggesting implicitly that it is slightly different from the natural sciences in that with history the knower's perspective has a central role to play throughout. The class task about editing the events from the Nuremberg Trials and losing valuable information is well made, but is also not 100% clear. Remember that although clarity is not a skill against which you are marked, there needs to be enough clarity to put the point across. This is something that is often borderline in this essay. This is further exemplified when the student makes the point that in an examination you are motivated by the best argument you can produce. There is a potential argument that this works the same way for historians, but it is not clear if this has been picked up by the student. Overall, there is recognition that for an event such as the Second World War there are so many shades of opinion that the knower's perspective has to play a role, while recognizing that it is not a situation of too many different choices and hence anything can be justified. In the end there is a question as to whether perspective is shaped by the pursuit of knowledge or whether it is the other way around.

This is followed by different considerations of history. The student seems to suggest that if history is about facts, then the viewer's perspective has less of a role to play. It is only when the facts seem very different from other facts presented that the knower's perspective plays a role. The work of David Irvine is used here, an example that is often used badly as students only understand it superficially—but in this case it is effectively used. Overall, if there are a lot of facts available then in the end the historical truth prevails and is agreed upon. A second argument is put forward about the use of sources and what happens when they contradict in such a way that there is no fully established truth. The student suggests that in this case the knower's perspective is open to all arguments and counter-arguments. An effective example of how this works is based on the student's research for their extended essay, looking at France's domestic policy and global status under Napoleon in the 19th century. The student found that extensive reading could change perspectives and so the perspective of the historian may matter in such cases, but the position of the learner may not. The implication is that whose personal perspective is under discussion matters.

The conclusion that follows is not exciting but it succinctly ties the essay together. Only one sentence is afforded to each of the areas of knowledge. As a number of mini conclusions have been given as the essay progresses, there is not a feeling that it has no conclusion and in this case the detail is at about the right level as it does not feel as if the student is repeating points. The final sentence gives the essay a definite ending.

Despite some the concerns about the clarity of explanation and one or two of the arguments, the student has covered a lot of ground. At times there is a lack of depth, but the student more than makes up for this with a real breadth of positions and the fact that there is a genuine understanding of the two areas of knowledge in relation to the question. This is an evaluative, well-argued essay that fully covers the question. It is effective, arguments are clear and supported, and the slight lapses do not stop the "excellent tier" being the best fit.

Exemplar essay 2

To what extent does the application of knowledge in mathematics and the arts increase its value?

The application of knowledge can be defined as the action of putting knowledge into operation. According to the claim at hand, the value of knowledge, without being put into operation, is diminished. The area of Mathematics, an area of knowledge that was founded on reasoning and logic, diverges into two branches, pure mathematics and applied mathematics, which has also been loosely defined as applied maths and the appreciation of maths. Art can also be separated into two branches, applied art and art appreciation. Hence in order to examine which of the two branches within these two areas of knowledge hold more value in the world, or if one branch's value diminishes, appreciation must also be defined. Appreciation can be defined as the recognition and enjoyment of someone or something. In this essay, application of knowledge will be contemplated in contrast to appreciation of knowledge in order to evaluate whether the application of knowledge is more valuable than its appreciation.

The common perception within mathematics is that out of its two branches, applied mathematics is more valuable than pure mathematics. Many students who take mathematics as a required course would probably agree, dismissing the indoctrination of pure mathematics as useless as it is inapplicable in their future careers. Perhaps Srinivasa Ramanujan would agree with this as well. Ramanujan grew up in Madras, a city which at the time had no formal teaching in pure mathematics. Despite this, he was admitted to Cambridge University in 1914 where he became a pioneer in theoretical mathematics and graduated with a degree in the Bachelor of Science by Research[1]. In his lifetime, he went on to pioneer mathematical innovations such as the theory of numbers and the properties of the partition function: huge contributions to our world from the field of mathematics[2]. This may show that even without an in depth knowledge of pure maths, Ramanujan was still able to achieve great feats. Hence perhaps Ramanujan is an example that supports the claim that applied mathematics holds more value in the world, whereas pure mathematics, mathematics without the intention to be applied, has less value in the world.

However, does this mean that pure mathematics has no importance in the world, as it is not applied? Richard Brown, director of undergraduate studies in the Department of Mathematics at John Hopkins University, would disagree. In 2014 during his Ted talk titled "Why Mathematics?' he discusses the idea that mathematics is "not about the numbers" but is rather "the ideas behind the numbers" and the creativity that is derived from mathematics. Although applied maths is inhibited by the physical world, pure maths can stem from imagination and result in the creation of abstract objects and hence can be said to improve our creativity[3].

Brown also introduces the importance of pure mathematics in creativity and the process of thinking logically, demonstrating its value in reasoning. Paul Lockhart, in his essay 'A Mathematician's Lament', infers that mathematics is taught incorrectly today, advising us to instead teach it as an artistic endeavour[4]. Music is taught as an art, hence students are not restricted to learning scales or properly writing musical notes first, but are rather taught to tackle the subject creatively. However, mathematics is first and foremost taught in terms of its basic rules and its applicability in our world, creativity and imagination in maths is not encouraged as much as its application in the real world, perhaps leading to its negative and sterile depiction, void of expression, in society. However, in teaching mathematics creatively as pure maths, students would not only enhance their creativity, or even perhaps further their interest in maths, but also focus on thinking analytically and learn deductive reasoning as the structure behind the maths is taught instead of focusing on its application in the real world. Therefore perhaps this indicates that pure maths is valuable in teaching students how to think logically and to reason deductively.

Furthermore, while applied mathematics explores how mathematics fits into the world, pure mathematics may address and explain a question that has long been left unanswered or is, as Brown says, 'so counterintuitive a result it's just stunning to look at'[5]. It may also establish a link between divergent fields of mathematics that had never been explored before. Pure mathematics has been often described often as the appreciation of mathematics, whereas applied mathematics has been depicted as, evidently, the application of mathematics. So perhaps, the value in pure maths is found not in its place in the world, but appreciating the aesthetic value of mathematics and understanding how it fits into the greater whole.

This same distinction can be seen within art between the application and the appreciation of art. Yet again, just as it is in mathematics, the application of art is often regarded more highly than the appreciation of art. After all, not many know that art appreciation is a class that can be found in many universities nowadays in different forms, one university being Florida Tech[6]. The application of art, on the other hand, is often taught

in many schools from primary to secondary and all the way to university, for example, my school offers art classes from the very beginning of primary to the end of secondary school but does not offer any classes similar to art appreciation. Many artists have been given accolades and rewards for their work, for example, the Bucksbaum Award, given from the Whitney Museum of American Art in 2014 was given to Zoe Leonard, one of the predominant artists of her generation known for her work in photography, film and sculpture[7]. For the 2014 competition, she created *945 Madison Avenue*, a piece of artwork which transformed one part of the Museum's fourth floor into an enormous camera obscura, which is when a small hole in one side of a dark room projects an inverted image of the outside view onto the walls[8]. Her creativity and imagination were applauded and appreciated through the award perhaps indicating that the application of art is more valuable than the appreciation of the work of art itself. After all, no one is rewarded for being the best appreciator of art.

However, can we state that the application of art is more valuable than its appreciation as a fact? Everyday, many flock to museums such as Le Louvre or the aforementioned Whitney Museum of American Art to simply look at and appreciate art, or learn more about their history, or to acquire a deeper understanding of the world we live in today.

Artists create artwork, perhaps not only for self-expression but also to send a message out into the world, and the appreciation of art allows us to understand this message. For example, the National Gallery Singapore recently opened a collection of art which traces the cultural and artistic shifts in Southeast Asia from the mid 1900s to present day, including crucial events such as the Vietnam War and the effects of rapid industrialization on an agrarian society. Its major effort to put together a collection of artwork from modern and contemporary art from Southeast Asia for large audiences to appreciate is unprecedented[9]. The collection allows art-goers, or art-appreciators, to expand and explore their understanding of the historical events depicted in the collection, allowing them to delve into history and travel all the way through to present day, exiting with an increased knowledge of Southeast Asia and maybe even themselves.

Not only does art allow us to expand our knowledge of historical events and the transition within history to present day, it can also be a social commentary of the present day. An example of this is the metal sculpture of Bluebelle[10] which was displayed in Paris. Bluebelle is a whale caught in the South Atlantic in 1912, the lifesize instalment of Bluebelle was on display concurrently with the end of 2015 COP21 meeting and Japan's whaling fleet setting sail for its annual hunting season in the Antarctic. The sculpture reminds us of the ever-present and increasingly prominent problem of the threatened species and with Japan's plan to kill almost 4000 minke whales in the Antarctic region in the proceeding 12 years, the message behind the sculpture is made even more prominent and eminent. Perhaps the collection of Southeast Asian modern and contemporary art and the sculpture of Bluebelle both show that while the creation and the application of art is immensely important in the world perhaps understanding the underlying commentaries these artists are making is equally important to our society.

In analysing the value of applied knowledge against knowledge not applied, it can be inferred that it is difficult to come to clear-cut conclusions. However, regarding applied knowledge and knowledge that is not applied, the consensus is that applied knowledge is more valuable as it has real value in the world. However, as explored in this essay, knowledge not applied can increase and improve our … reasoning and imagination, and can also allow us to understand more fully the important concepts and resounding issues in our lives. Therefore, applied knowledge has value in the world, however, as seen in argument of pure mathematics against applied mathematics and the appreciation of art against the application of art, it can be

said that the application of knowledge is as valuable. Therefore, both the appreciation of knowledge and the application of knowledge have value in the world, hence solely appreciating knowledge does not diminish the value of knowledge, perhaps it can even be said to enhance the value of knowledge itself.

1 Jalal, Maan. "Dev Patel Talks Films and Cultural Divides – Khaleej Times." *Khaleej Times*. 13 Dec. 2015. Web. 15 Dec. 2015.

2 "Srinivasa Ramanujan Indian Mathematician." *Encyclopedia Britannica*. 31 Oct. 2014. Web. 15 Dec. 2015.

3 Rienzi, Greg."Why Math? JHU Mathematician on Teaching, Theory, and the Value of Math in a Modern World". *The Hub*. John Hopkins. 18 Nov. 2015. Web. 02 Mar. 2016.

4 Lockhart, Paul. *A Mathematician's Lament: How School Cheats Us Out of Our Most Fascinating and Imaginatve Art Form*. New York, NY: Bellevue Literary, 2009. Print.

5 Rienzi, Greg."Why Math? JHU Mathematician on Teaching, Theory, and the Value of Math in a Modern World". *The Hub*. John Hopkins. 18 Nov. 2015. Web. 02 Mar. 2016.

6 "HUM 1020 Art Appreciation." Florida Tech. Nov. 2011. Web 15. Dec. 2015 http://www floridatechonline.com/programs/undergraduate/undergraduate-courses/hum-1020-art-appreciation/

7 "Buckshaum Award." Bucksbaum Award. Web. 15 Dec. 2015. http://whitney.org/About/BucksbaumAward

8 "Bucksbaum Award." Bucksbaum Award. Web. 15 Dec. 2015. http://whitney.org/About/BucksbaumAward

9 Lau, Joyce. "In Singapore a New Cultural Vision." *The New York Times.* The New York Times. 8 Dec. 2015, Web. 15 Mar. 2015.

10 Simons, Marlise."A Whale Sculpture in Paris Aims to Help Save Some Species." *The New York Times*. The New York Times. 07 Dec. 2015. Web. 15 Dec. 2015.

Commentary

The student starts out with a brief consideration of the concept of application, the link to application and then a division of mathematics into applied and pure. The idea of pure mathematics being noted as the appreciation of mathematics is interesting as it has some relevance, but is not really a wholly accurate definition of pure mathematics. A parallel stance to this is taken with the arts, which is probably a better distinction as the term *appreciation* makes absolute sense in the arts. Like the appreciation of mathematics, applied art will need to be considered carefully. Despite the misgivings in the definitions, this is a clear, concise introduction that shows a definite direction of flow. These misgivings will need to be considered as the essay progresses.

The essay then moves into a discussion about mathematics being applied. The next sentence, about students dismissing the indoctrination of pure mathematics as useless because it is inapplicable in a future career, is stated without any justification for that position; however, it is not stated as an absolute and as a slightly flippant statement it works to a degree. The example of Ramanujan is a good one as this really explains what the student is driving at. It makes clear that even though Ramanujan was studying theoretical mathematics, which would often be a definition of pure mathematics, the student is suggesting that mathematics that has any application is by definition applied. This is immediately followed by raising a point of view in the form of a counterclaim suggesting that pure mathematics is about imagination and, in this case, more specifically about using creativity. This is a fairly subtle but effective way of saying that the idea of applicability needs to be interpreted with a fairly open mind. This leads into a fine example from Paul Lockhart on the teaching of mathematics, which effectively links

mathematics and music as being very similar, and asks why they should initially be taught from very different angles. This of course allows the student to directly suggest that pure mathematics encourages creativity and within that it has an application. This shows some good insights into how mathematical knowledge works. Although the reader may not wholly agree with what is said, the student creates an argument and justifies it. Hence credit is given for this thinking process and using examples that are understood and effective. The final few lines of this section on mathematics suggest that the appreciation of mathematics is associated with aesthetics and that part of aesthetics may lead to links with mathematics being made—the idea of mathematics as a coherent subject. This is a thoughtful, original and well-constructed argument and therefore in TOK terms it has to be given credit.

The structure of the essay now takes the reader to the arts. This shows how a simple structure can be wholly effective. The section on the arts follows a very similar line of development to mathematics, being focused on application and appreciation. The point is made that what happens in school and at university is very much about creating pieces of art, which for the writer of the essay is about application. Throughout the essay the student is focused on the key words and how to work with them—this could be a good example of "visible thinking". As you read the essay there is a strong presence from the student and what is being said. The first example used in the section on the arts is of Zoe Leonard and it is thought-through and well explained. It is not presented in great detail, but there is enough detail for it to be wholly effective. It is possible to spend too much time on an example in TOK and this essay shows clearly what counts as enough. The statement at the end of the paragraph: "After all, no one is rewarded for being the best appreciator of art" is a telling statement that shows thought being put into the situation. Having set up the argument to follow on directly from mathematics, the different point of view now raised can move away from previous arguments and create quite a strong viewpoint.

This is where the student acknowledges that appreciation of art is something that is done a lot of the time. A successful example is given: the National Gallery Singapore bringing a whole variety of art together for locals to understand and appreciate culture and history through art. This moves onto the example of "Bluebelle": a full-size metal sculpture of a whale caught in a whaling expedition. Its exhibition was timed to coincide with the Japanese whaling fleet setting sale for their annual hunt. The conclusion reached by the student is that the underlying commentaries that can be seen in the appreciation of art may be equally valuable to knowledge in art. Once again the parallelism between the two areas of knowledge works well. It ties the essay together structurally and provides a tight, coherent piece.

The way the conclusion is set up allows the student to share some final thoughts on value. This amounts to the idea that irrespective of whether knowledge is applied or not applied there is still the potential for it to have value, but that overall the most valuable knowledge is knowledge that is applied. Within this is the implication that what is meant by valuable is not the same in both areas of knowledge. The student spends quite a lot of time making this point and it could certainly have been clearer and more in-depth. Nevertheless, there is a clear sense that this was an intended conclusion—the suggestion is that the student had decided on the conclusion as part of a planning phase and it successfully brings the essay to a close.

Structurally this is a very good essay that shows a good and balanced understanding of the areas of knowledge. It keeps the key words in focus and the examples are original and relevant. Arguments are well constructed and there is clear sense that for the most part it is an evaluative essay.

FINAL CHECKLIST

Once you have reflected on the two exemplar essays in light of what you know about TOK, and thought about your teacher's comments, you should make any final changes to your work. Once that is done you are at the last stage of finishing the essay. To help you with this, use the following list to check that everything is in order.

- **Have you read every piece of advice from your teacher on your essay and acted on it?** Make sure you read the feedback carefully and seek clarification for anything you do not understand. If the feedback suggests that a part of the essay needs extra work or more major work, then go back to the relevant section of this book to see what else you can change.
- **Have you reread your introduction to check it fits with the rest of the essay?** Students often spend time at the beginning crafting an introduction, but then do not revisit it. In any essay there is a strong argument to suggest that the last thing you finalize is the introduction. As the essay-writing process has continued, many of your initial ideas may have been revised and the order in which you put the essay together may have changed. What once seemed like a really good point may have been discarded when you found it contradicted an even better point. Make sure that your introduction has kept pace with this and that what you said you are going to do, you have actually done. If there are slight discrepancies, this is easy to fix: you just need to rework the introduction to check it fits with the rest of the essay.
- **Is your essay fewer than 1600 words?** Make sure your word count has not gone over the 1600 word limit (excluding bibliography and diagrams). If it has you will need to do a little more fine-tuning and bring it down to fewer than 1600 words. Remember that if it is over 1600 words your examiner is not required to read beyond the 1600 word limit.
- **Have you done a final spelling and grammar check?** Through the last stages of working on the essay as you fine-tune, it is easy to introduce small errors. Although these will not affect your final mark, it is always a good idea to produce the most accurate work possible. Make sure you do a final check.
- **Do all ideas in your essay that are not common knowledge have a reference?** Check your referencing very carefully. Anything that is a direct quote, and any idea that is not your own, needs a reference. If you are in doubt, then reference it.
- **Is the bibliography at the end of the essay complete and coherent?** The style of reference is flexible, but it must be clear:
    - what is being referenced
    - who is being referenced
    - when it was published
    - by whom it was published.
- **Check your essay's presentation.** Ensure that your essay is double-spaced, in font size 12 and in an easily readable font.
- **Finalize your PPF.** As you have gone along you should have been completing your PPF. You need to do one final check that all three sections are complete and that they say what you want them to say.
- **Hand in the essay to your TOK teacher for final upload or upload it yourself to the IB system** and await confirmation.
- **Give your teacher your completed PPF.** Your teacher will add final comments and upload the PPF to the IB system.

FINAL THOUGHTS

The essay process is now complete and hopefully it has been a positive process. Your TOK teacher will advise you on how to proceed in terms of uploading your essay to the IB. You will either do it yourself under advice from your teacher or your teacher will do it on your behalf. This may be the end of TOK for you now, but there may still be a little more to do. Hopefully you have enjoyed the essay-writing process and enjoyed exercising your powers of thinking.

7 GETTING STARTED ON THE TOK EXHIBITION

In this chapter you will:

- ✔ look at an overview of the exhibition
- ✔ think about how you will be marked on the exhibition
- ✔ make a start, using a specific set of prompts and a given set of objects
- ✔ look at a series of exemplars
- ✔ reflect on your choices.

INTRODUCTION

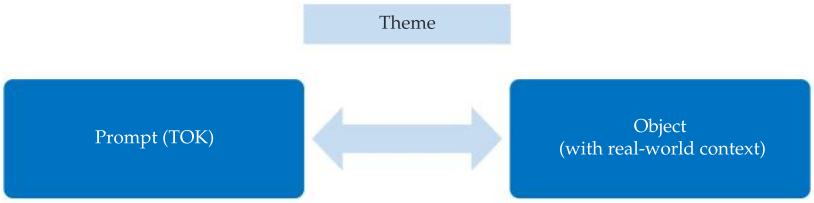
This is the first of three chapters that will take you through the preparation for the exhibition. This chapter introduces you to the exhibition task and to the marking instrument used for the exhibition, then you will focus on choosing prompts and objects. In the next chapter you will focus on writing your commentary and on how this element of the exhibition is marked. In the last chapter you will think about how you can put together your exhibition to show to an audience.

TOK exhibition from Branksome Hall, Toronto, Canada

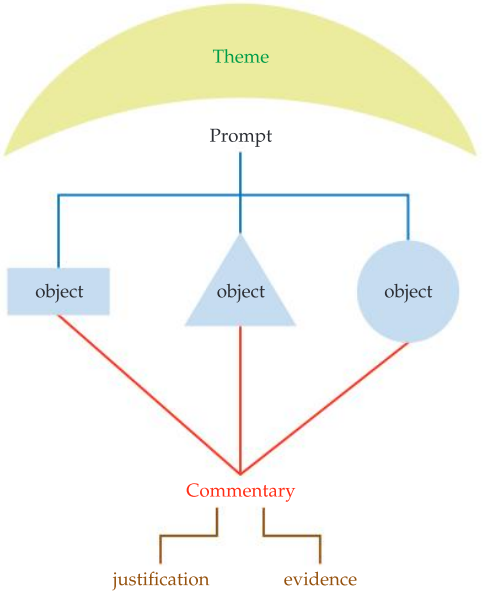
OVERVIEW

It is likely that you will complete your exhibition in year one of the course and you will be given eight hours of class time to undertake some work on it. It is also likely that you will need to spend some time outside class to ensure that you have the best version possible. Internal assessment is used for your exhibition: it will be marked by your teacher and then your teacher's marks will be moderated by the IB.

The exhibition task is all about exploring TOK in the world around you. You are given a question (a prompt) and you need to connect this to something concrete in the real world. To give some boundaries, the exhibition is broadly based around one of the themes.



▲ **Figure 7.1** Components of the exhibition



▲ **Figure 7.2** Illustration of what is to be exhibited

Using one object in your exhibition would give you a quite limited view. You are therefore required to use three objects. The way in which you consider the prompt is by choosing three objects then explaining how they link to the prompt and what they tell you about the prompt. This is written as a commentary, which is the final assessment. You are then required to exhibit the objects and the commentary. An overview of the exhibition task is shown in Figure 7.2.

You will now look at this in more detail.

Themes

It is strongly recommended that the exhibition is based around one of the themes—this could be one of the optional themes or the core theme. The reason for this is to give your exhibition a degree of focus and also for you to think about the role of knowledge in your world rather than a slightly more detached academic world, which is the focus of the essay.

The connection to the theme is not something against which you are explicitly marked, so think of the theme as providing the boundaries for your exhibition. For example, if through the focus on a theme you briefly mentioned an area of knowledge or a different theme, then this would not be a problem. However, if you had a strong focus on a single area of knowledge, or had no clear focus on anything in particular, this would potentially cause problems.

Prompts

Your exhibition requires you to pick 1 of 35 prompts listed in the IBO *Theory of Knowledge Guide*. These are shown in Table 7.1.

1.	What counts as knowledge?
2.	Are some types of knowledge more useful than others?
3.	What features of knowledge have an impact on its reliability?
4.	On what grounds might we doubt a claim?
5.	What counts as good evidence for a claim?
6.	How does the way that we organize or classify knowledge affect what we know?
7.	What are the implications of having, or not having, knowledge?
8.	To what extent is certainty attainable?
9.	Are some types of knowledge less open to interpretation than others?
10.	What challenges are raised by the dissemination and/or communication of knowledge?
11.	Can new knowledge change established values or beliefs?
12.	Is bias inevitable in the production of knowledge?
13.	How can we know that current knowledge is an improvement upon past knowledge?
14.	Does some knowledge belong only to particular communities of knowers?
15.	What constraints are there on the pursuit of knowledge?
16.	Should some knowledge not be sought on ethical grounds?
17.	Why do we seek knowledge?
18.	Are some things unknowable?
19.	What counts as a good justification for a claim?
20.	What is the relationship between personal experience and knowledge?
21.	What is the relationship between knowledge and culture?
22.	What role do experts play in influencing our consumption or acquisition of knowledge?

23.	How important are material tools in the production or acquisition of knowledge?
24.	How might the context in which knowledge is presented influence whether it is accepted or rejected?
25.	How can we distinguish between knowledge, belief and opinion?
26.	Does our knowledge depend on our interactions with other knowers?
27.	Does all knowledge impose ethical obligations on those who know it?
28.	To what extent is objectivity possible in the production or acquisition of knowledge?
29.	Who owns knowledge?
30.	What role does imagination play in producing knowledge about the world?
31.	How can we judge when evidence is adequate?
32.	What makes a good explanation?
33.	How is current knowledge shaped by its historical development?
34.	In what ways do our values affect our acquisition of knowledge?
35.	In what ways do values affect the production of knowledge?

▲ **Table 7.1** The 35 exhibition prompts

Taken from: IBO *Theory of Knowledge Guide* (IBO 2020: 40–41).

As you can see, these are all knowledge questions; in one sense they can be seen as "super" knowledge questions that are very general knowledge questions, allowing for many different interpretations. The prompt is the basis for your exhibition and the exhibition itself provides a series of viewpoints on how the question can be answered. In exactly the same way as with the essay titles, ensure that you follow the prompt carefully and do not change its wording. If you do not like one of the concepts specified in the prompt you cannot change it; if you think the prompt should have a different focus you cannot change the focus. If you have those sorts of doubts about the prompt, then the conclusion you should draw is that maybe this prompt is not for you.

Objects

The viewpoints featured in the exhibition are created by thinking about and reflecting on three objects that you choose. These objects could be physical objects or they could be digital images of physical objects. There is no advantage of one over the other. If they are digital images that are not your own then you will need to reference the source. You have a very wide variety of objects that are suitable for use in the exhibition, but you should note the following.

- Your object must have a specific real-world context. This means general objects and generic images should not be used as they are unlikely to be successful. For example, a photograph of an unspecified building or book is unlikely to work well. However, a photograph of the Eiffel Tower or a photograph of the cover of the book *Madame Bovary* by Gustave Flaubert both have a real-world context and are therefore more likely to be successful.
- You can use objects that you have created but they must be pre-existing. For example, it is fine to use a sculpture that you made as part of a visual art class, your extended essay or a piece of music you wrote to perform in a charity concert. You are not allowed to create an object specifically for the purpose of using it in the TOK exhibition.
- You can use quotes by famous people, tweets from politicians or parts of news articles as objects.

- Your objects must be able to be turned into an image because you are required to send this as part of the assessment. If you want to use a piece of music or a movie you will need to think carefully about the object you use. In the case of a piece of music you could use a copy of part of the score or a photograph of the composer. In the case of a movie you could use a photograph of the main character or of the poster used to advertise the movie.
- Your objects can be very personal to you. For example, you can use your lucky mascot or the ball with which you scored the winning goal at the local soccer tournament.
- You must be able to link the objects to the prompt. The objects could also link to each other but that is not a requirement.
- You will need to offer some explanation of your objects when you start your commentary, as the specificity of what each object is may not be obvious just from the image or the physical object itself.

The exhibition commentary

The exhibition commentary is a written account of how the three objects help you to answer the prompt. It is this commentary which is assessed by the IB and provides the grade for the Internal Assessment component. The commentary should be a maximum of 950 words. As you are using just three objects to respond to the prompt, using only 950 words, you are not going to be giving a full answer to the prompt and so your commentary will not have a conclusion.

Some things that apply to the essay also apply to the commentary.

- You are required to acknowledge external sources. This means that anything that you use from an external source or that is not common knowledge will need a citation and there will need to be a bibliography of references. This needs to include references for any images that you have used. The IB is not worried about the style of citation, as long as you use it consistently. The bibliography is not part of the word count.
- You should not exceed the word count as the moderator will not read beyond it.
- You should ensure that the moderator will not struggle to read your commentary; use a font that is easy to read (such as Times New Roman, Arial or Calibri) and have your main text in font size 12 and double spaced. Remember that examiners are usually marking more than 100 commentaries.

The exhibition

You will be invited to show your exhibition to your classmates and possibly a wider audience—the IB requires this and it is possible that your school will also give some sort of grade for the exhibition. However, you should remember that it is the commentary that is marked by the IB, not the exhibition itself.

Guidance

As with the essay, your teacher will authenticate that your commentary is your own work and a number of meetings will need to be planned with your teacher. Unlike meetings focused on the essay, the precise number and the nature of meetings about the commentary is not

specified and there is no form to complete. Hence you will want to seek guidance at the start to understand fully what you are required to do and to discuss with your teacher how you proceed from there. Your teacher is required to give you feedback on a draft of the commentary. Once a draft is submitted and the feedback is provided by your teacher, the next version you submit will be the one for final submission.

HOW YOU WILL BE MARKED

The major question that is being asked in the exhibition is as follows.

> Does the exhibition successfully show how TOK manifests itself in the world around us?

This is unpacked in the marking criteria and before you start the planning of the exhibition it is important to be clear on how the marking instrument works. As with the essay, you are marked against a series of descriptions using what is called global impression marking. A copy of the marking descriptors is shown in Table 7.2.

Does the exhibition successfully show how TOK manifests in the world around us?					
Excellent 9–10	**Good 7–8**	**Satisfactory 5–6**	**Basic 3–4**	**Rudimentary 1–2**	**0**
The exhibition clearly identifies three objects and their specific real-world contexts. Links between each of the three objects and the selected IA prompt are clearly made and well-explained. There is a strong justification of the particular contribution that each individual object makes to the exhibition. All, or nearly all, of the points are well-supported by appropriate evidence and explicit references to the selected IA prompt.	The exhibition identifies three objects and their real-world contexts. Links between each of the three objects and the selected IA prompt are explained, although this explanation may lack precision and clarity in parts. There is a justification of the contribution that each individual object makes to the exhibition. Many of the points are supported by appropriate evidence and references to the selected IA prompt.	The exhibition identifies three objects, although the real-world contexts of these objects may be vaguely or imprecisely stated. There is some explanation of the links between the three objects and the selected IA prompt. There is some justification for the inclusion of each object in the exhibition. Some of the points are supported by evidence and references to the selected IA prompt.	The exhibition identifies three objects, although the real-world contexts of the objects may be implied rather than explicitly stated. Basic links between the objects and the selected IA prompt are made, but the explanation of these links is unconvincing and/or unfocused. There is a superficial justification for the inclusion of each object in the exhibition. Reasons for the inclusion of the objects are offered, but these are not supported by appropriate evidence and/or lack relevance to the selected IA prompt. There may be significant repetition across the justifications of the different objects.	The exhibition presents three objects, but the real-world contexts of these objects are not stated, or the images presented may be highly generic images of types of object rather than of specific real-world objects. Links between the objects and the selected IA prompt are made, but these are minimal, tenuous, or it is not clear what the student is trying to convey. There is very little justification offered for the inclusion of each object in the exhibition. The commentary on the objects is highly descriptive or consists only of unsupported assertions.	The exhibition does not reach the standard described by the other levels or does not use one of the IA prompts provided.

▲ **Table 7.2** The level descriptors in the marking instrument

Taken from: IBO *Theory of Knowledge Guide* (IBO 2020: 47).

Your teacher will decide which of the levels (excellent, good, satisfactory, basic or rudimentary) is the best fit for your commentary and will then fine-tune this to decide how well it fits in the level. For example, your teacher might first decide that your commentary belongs in the "good" level, then decide whether to award it 7 or 8 marks.

So how does the fine-tuning work? There are two ways teachers look at this.

- If your commentary on the exhibition is a good fit with the descriptor for that level then you will be awarded the higher mark. If the level descriptor is still the best overall fit but there are gaps, then it is likely you will be awarded the lower mark.
- The examiner will read the commentary, decide on the level and then ask the question: "Is it closer to the description in the level above or to the level below?" If it is closer to the level below then the mark will be the lower mark and if it is closer to the level above then it will be the higher mark.

Finally, your teacher is required to send a sample of their marking to the IB where it is moderated to ensure it is consistent with the marking of other teachers from different schools.

THINKING POINT

You should now spend some time carefully reading the descriptors and reflecting on the key attributes.

Discussion

There are many ways in which the level descriptors can be; below is an example of what you might have found.

Does the exhibition successfully show how TOK manifests in the world around us?					
Excellent 9–10	**Good 7–8**	**Satisfactory 5–6**	**Basic 3–4**	**Rudimentary 1–2**	**0**
The exhibition clearly identifies three objects and their specific real-world contexts. Links between each of the three objects and the selected IA prompt are clearly made and well-explained. There is a strong justification of the particular contribution that each individual object makes to the exhibition. All, or nearly all, of the points are well-supported by appropriate evidence and explicit references to the selected IA prompt.	The exhibition identifies three objects and their real-world contexts. Links between each of the three objects and the selected IA prompt are explained, although this explanation may lack precision and clarity in parts. There is a justification of the contribution that each individual object makes to the exhibition. Many of the points are supported by appropriate evidence and references to the selected IA prompt.	The exhibition identifies three objects, although the real-world contexts of these objects may be vaguely or imprecisely stated. There is some explanation of the links between the three objects and the selected IA prompt. There is some justification for the inclusion of each object in the exhibition. Some of the points are supported by evidence and references to the selected IA prompt.	The exhibition identifies three objects, although the real-world contexts of the objects may be implied rather than explicitly stated. Basic links between the objects and the selected IA prompt are made, but the explanation of these links is unconvincing and/or unfocused. There is a superficial justification for the inclusion of each object in the exhibition. Reasons for the inclusion of the objects are offered, but these are not supported by appropriate evidence and/or lack relevance to the selected IA prompt. There may be significant repetition across the justifications of the different objects.	The exhibition presents three objects, but the real-world contexts of these objects are not stated, or the images presented may be highly generic images of types of object rather than of specific real-world objects. Links between the objects and the selected IA prompt are made, but these are minimal, tenuous, or it is not clear what the student is trying to convey. There is very little justification offered for the inclusion of each object in the exhibition. The commentary on the objects is highly descriptive or consists only of unsupported assertions.	The exhibition does not reach the standard described by the other levels or does not use one of the IA prompts provided.

▲ **Table 7.3** Specific parts of the level descriptors highlighted for analysis

The different colours in Table 7.3 are used to help you to understand the key things against which you are assessed. It is not the way the teachers mark—they are looking for the best overall fit; they are not trying to assess different strands and then come to some form of average. As you can see from the different colours, when you put

together your exhibition and write your commentary you need to think very carefully about:

- choosing the prompt
- choosing your objects
- the specificity of each object and its real-world context
- the direct link between the objects and the prompt
- the contribution that each object makes in responding to the prompt—this should be justified
- making points that are supported by evidence.

Themes, prompts and objects

It is strongly recommended that you begin by deciding on the theme to provide you with the boundaries or parameters for your practice exhibition. Carefully choosing the prompt and the objects can give your exhibition a really positive start. With the right three objects the commentary will flow, but if there are problems with the object then it is likely to become a problematic commentary. There is no right answer to the question: "Which comes first, the prompt or the object?" It really is a matter of preference. However, there are a number of possibilities.

Choosing a prompt first

In this case the start process is the list of prompts and you should decide which one attracts you the most. You might start by thinking about aspects of the course on which there has been a focus, or particular lessons, that have really interested you. From this you should be able to work out which TOK concepts you find the most interesting. You can then try to match this to the prompts and make a decision. You would follow this up by making decisions on the three objects.

Choosing an object first

You may have a favourite object that you are determined to place in the exhibition. You would then go to the prompts and see which one links best to your favourite object. In this case you would again be thinking about the concepts raised by the prompts and deciding what thoughts your object raises about that concept. You would then choose two more objects to fit with this.

Choosing a set of three objects first

In this case you start by choosing three objects that interest you. If you would like the three objects to link to each other (this is not a requirement) then that is also possible. You then need to go to the list of prompts and find one that fits. As long as the three objects link to the prompt and provide you with viewpoints, ideas and reflections on the prompt then that is all that is needed.

Note: this is presented as being a linear process but in reality this will probably not be the case—you may need to revisit parts, change the focus of an object, or possibly change an object or prompt and rethink. This is not a problem and is part of the planning process.

MAKING A START

This is your chance to practise working on an exhibition. To do this you will focus on six of the prompts from the IBO *Theory of Knowledge Guide* and work with ten selected objects.

Prompts

These are the six prompts you will use for practice.

Prompt 3: What features of knowledge have an impact on its reliability?

Prompt 10: What challenges are raised by the dissemination and/or communication of knowledge?

Prompt 14: Does some knowledge belong only to particular communities of knowers?

Prompt 21: What is the relationship between knowledge and culture?

Prompt 31: How can we judge when evidence is adequate?

Prompt 33: How is current knowledge shaped by its historical development?

For your work on the exhibition you will have the full choice of the 35 prompts.

Objects

You will need to choose three objects for your exhibition and you will have complete freedom and control over this choice of your objects. It is an opportunity for you to pick objects that you find particularly interesting and that you have encountered in the world around you. To help introduce you to the exhibition task, ten example objects have been selected here for you for this practice exercise. Images and descriptions of these ten objects follow below.

> "War is peace.
> Freedom is slavery.
> Ignorance is strength."

Object 1

Quote from George Orwell's 1984

This is a famous quote from the novel *1984* written by George Orwell in 1948 about a "future society". Within that society there is a clear class structure that dictates all sorts of privilege, there are many impositions on freedom, the language is being diminished to exert control, history is rewritten and people are under constant surveillance.

Object 2

Poster for the movie Dr No

This is one of the advertising posters for the James Bond movie *Dr No*. This is the first movie, released in 1962, from the James Bond franchise. The movies follow the fictional adventures of James Bond, who is a secret agent for the British government, code named 007. The movies were originally based on the books written by Ian Fleming and the latest one, *No Time to Die*, is number 27 in the franchise.

Object 3

Manchester United Football Club crest

This is the crest of Manchester United Football Club. This football (soccer) club currently plays in the Premier League of English football and is located in the city of Manchester, UK. The crest consists of the name of the club, a red devil and a ship.

Object 4

Gutenberg's printing press

Johannes Gutenberg's printing press was created in the 15th century and is often seen as part of the beginning of mass printing in Europe. Earlier printing presses had been produced in China and it is likely that this is where the first printing press was produced.

Object 5

Tweet from Boris Johnson

This is a tweet from Boris Johnson, the Prime Minister of Great Britain, posted on the 2 October 2020, during the Covid-19 pandemic.

> We will get through this – but only if we work together. Continue to follow the rules, download the #NHSCOVID19app – and together we will fight back against this virus, protect our NHS and save many more lives.

Object 6

Quote from Margaret Thatcher

This is part of a speech made by Margaret Thatcher, the UK's first female prime minister, at a political conference in 1980. This quote includes what has since become one of her most famous phrases. The media had been discussing the possibility of Thatcher's government making a U-turn on policy, trying to make the government appear weak. This was Thatcher's (very successful) attempt to resolve this.

> To those waiting with bated breath for that favourite media catchphrase, the U-turn, I have only one thing to say. You turn if you want to. The lady's not for turning.
>
> http://news.bbc.co.uk/onthisday/hi/dates/stories/october/10/newsid_2541000/2541071.stm

Object 7

Skara Brae

Skara Brae is a pre-historic village located on the Orkney Islands off the north coast of Scotland. It is believed that the village is over 5,000 years old and it is one of the best preserved of its age in Europe. It was first discovered in 1850 when a powerful storm hit the coast where it is located. The houses still contain furniture, such as stone beds and dressers, and artefacts have been found around the site.

Object 8

Mount Taranaki

> Mount Taranaki is [reputed to be] New Zealand's most perfectly formed volcano. It is around 120,000 years old and last erupted in 1775 … volcanologists agree that the mountain is 'dormant' rather than extinct. …
>
> Taranaki is linked by [Māori] legend to the mountains of the central North Island. The story goes, Taranaki once lived with the other volcanoes of the central plateau – Tongariro, Ruapehu and Ngauruhoe. When he made flirtatious advances towards a pretty hill named Pihanga, Tongariro erupted in a jealous fury. Taranaki fled to the west, gouging out the Whanganui River on his way. Today Taranaki is still venerated and its summit is sacred to the Māori people of the area.
>
> www.newzealand.com/uk/feature/national-parks-egmont/

Object 9

The greater spotted woodpecker

This photograph of a greater spotted woodpecker was taken by the author in the garden of the house where he was staying on holiday in the far north of Scotland. According to the Royal Society for the Protection of Birds, this is a:

> striking black-and-white [bird]. It has a very distinctive bouncing flight and spends most of its time clinging to tree trunks and branches, often trying to hide on the side away from any observers. Its presence is often announced by its loud call or by its distinctive spring 'drumming' display.
>
> www.rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z/great-spotted-woodpecker/

The Royal Society for the Protection of Birds also states that this bird is not found in the far north of Scotland.

Object 10

The giant or king protea—protea cynaroides

The protea is seen as the national flower of South Africa. It is found throughout the southern and south-western parts of South Africa.

EXERCISE

Begin by choosing a theme. Now choose a prompt from the list of six on page 166. Each prompt has at least one major TOK concept embedded in it. When choosing a prompt you might want to think about which TOK concept interests you the most. For the six prompts given, the main TOK concepts are:

- reliability
- communication/dissemination
- the role of community
- culture
- evidence
- historical development.

Now choose one object from the ten given above.

For the object you choose, explain the link between the prompt and the object.

Next, you need to check you have made a good choice. To do this, you can consider what the level descriptors in the global impression marking instrument can tell you about your choices.

Four elements of the marking instrument are under consideration.

A. The objects must have specificity and real-world context.

B. The objects must have a direct link to the prompt.

C. Each object needs to make a contribution in responding to the prompt—this contribution should be justified.

D. The points you make need to be supported by evidence.

For each of the statements, A, B, C and D, write a sentence about the link between your object and the statement.

HOW THE PROCESS WORKS

How the process might work is demonstrated below using different themes, prompts, choices of object and ways of putting everything together. To give you a better overview, cases 1–4 have been done with reference to the section 'Themes, prompts and objects' on page 165.

Case 1: Choosing three objects then making the connection to the prompt

In this case three objects were chosen as symbols of culture, but their symbols suggest quite different ideas of culture.

Theme: Knowledge and the knower
Prompt 21: What is the relationship between knowledge and culture?
Objects: The protea, Mount Taranaki, Manchester United Football Club crest

The protea

A. The protea has been chosen as South Africa's national flower and is also the name given to the national cricket team.

B. Thus it can be seen as a symbol of how the country wishes to be seen and wishes to portray itself (an aspect of culture).

C. Given the beauty of the flower, this is a wholly positive symbol whereas in the past in South Africa, as in many other countries, there have been events that could be seen in a less positive light (culture can be seen differently because of the time period or because of the point of view of the observer). These aspects of culture have an effect on knowledge about South Africa, from South Africa and about those from South Africa.

D. Looking at the last 120 years of the history of South Africa, from the Boer War to the establishment of the Rainbow Nation, there are a lot of different aspects of life that will play into how South African culture is seen.

Mount Taranaki

A. Mount Taranaki is a recognizable symbol throughout New Zealand, both as a distinctive geographical feature and part of Māori legend.

B. Mount Taranaki is directly linked to Māori culture through the legend of the four mountains, which is one of the legends that recounts the creation of Aotearoa (New Zealand).

C. This looks at the idea that cultural knowledge can be represented through stories and storytelling.

D. This takes the idea that indigenous culture has a role to play in shaping a country as it is today; it is about the idea of a country embracing its indigenous culture and how the terms *national culture* and *indigenous culture* can overlap and contribute to knowledge.

Manchester United Football Club crest

A. The Manchester United Football Club crest is highly recognizable in the city of Manchester, UK, where passions about which football team people support run high—it is a "universally" understood symbol of who someone supports.

B. Within Manchester if you are a football supporter it matters which team you support. This is part of your culture. It influences what you say, how you see the world and in some cases who your friends are. However, today it is much more than this and Manchester United is seen as global brand. The club has fervent supporters who have never been to Manchester and have no affinity or understanding of the city itself.

C. This links to the idea that culture influences both a local identity and a global identity. Both are influenced by the same thing, but how this manifests itself is quite different.

D. This leads into the discussion that culture is dependent on point of view and is not necessarily about a particular place or its history.

Case 2: Choosing the prompt and then finding three objects

In this case the objects do not relate to each other but all have a strong link to the prompt.

Theme: Knowledge and technology
Prompt 31: How can we judge when evidence is adequate?
Objects: The greater spotted woodpecker, Gutenberg's printing press, Skara Brae

The greater spotted woodpecker

A. The photograph of the greater spotted woodpecker was taken by the author in the far north of Scotland. However, the website for the Royal Society for the Protection of Birds states clearly that this bird is not found in the far north of Scotland.

B. This raises question both about the reliability of the internet source used as evidence and the potential reliability of photographic evidence, as both cannot be correct in this case.

C. This leads to the idea that it may be more difficult to forge certain types of evidence and this influences how we judge the idea of adequacy.

D. For the author, the fact that he took the photograph is strong evidence, but for you reading this example, you might be more sceptical of the evidence and want to ask further questions.

Gutenberg's printing press

A. The creation of the printing press in Europe ultimately revolutionized the ability to mass copy. In the 15th century Gutenberg's printing press was a major technological breakthrough, but at the time the potential was not fully realized.

B. Although using the printing press to print was considerably faster than hand copying, it still remained a slow process. This leads to the question: "What evidence do we need to trust in something revolutionary for the future?"

C. In the case of Gutenberg's printing press, the evidence that was available at the time was trusted and the printing press went on to play a central role in the rise of Protestantism. In this case there was enough evidence to be judged adequate.

D. It is through history that we know that the evidence could be trusted. However, at that time this could not be known so the focus was on the immediate effect the invention could have. Consideration could also be given to the fact that printing was no longer the work of one person and hence there was potentially more reliability in what was printed.

Skara Brae

A. The discovery of Skara Brae on the Orkney Islands came as a surprise to everyone living in the area, given that it had remained undiscovered for many years.

B. There are stone beds and dressers in what is now seen as the living accommodation. However, the age of the settlement, along with a limited number of artefacts that have been found, bring into question whether we really know exactly how the accommodation was arranged and the purpose of different parts of rooms. We currently have no more evidence, leaving doubt over whether the evidence we have is good enough to draw precise conclusions.

C. Finding more evidence to make deductions for a site such as Skara Brae is difficult as there really is nothing else like it anywhere else in the world. In other ancient civilizations historians and archaeologists have often looked for commonalities with what has been found before and have used computer simulations to make predictions. Given the uniqueness of Skara Brae, the evidence for how lives were lived there is the best we have but remains very limited. The extent to which technology can help us support the physical evidence in this case is questionable.

D. This brings into question exactly what evidence was used when best guesses were made. Is it the case of considering what might be called "similar but different past societies" or did this become an exercise in logic based on the limited evidence that we had?

Case 3: Choosing three objects and then making the connection to the prompt

In this case the three objects are all linguistic and linked to situations that are political, although they address quite different areas of reliability.

Theme: Knowledge and language
Prompt 3: What features of knowledge have an impact on its reliability?
Objects: Quote from George Orwell's *1984*, tweet from Boris Johnson, quote from Margaret Thatcher

Quote from George Orwell's 1984

A. "War is peace. Freedom is slavery. Ignorance is strength" is a famous statement from the novel *1984*, which suggests that we can reposition language such that statements that are nonsensical to us make sense in the society of *1984*.

B. This raises questions about the reliability of language given that the repositioning of terms and the context in which they are used can fundamentally change meaning.

C. Furthermore, in the context of *1984*, this would also have effects on reliable thinking, as Orwell is exploring the idea that limiting and changing language limits and changes independent thought.

D. The quote works on the idea that in the world of *1984* what we would ordinarily consider as opposites, linguistically, are being used as synonyms, thus affecting the reliability of understanding.

Tweet from Boris Johnson

A. This tweet from Boris Johnson raises questions about the reliability of knowledge itself. The aim of the tweet is to motivate people to use the app that was designed to simply and efficiently trace and contact people who have been in touch with others who have tested positive for Covid-19.

B. However, the setting up of a track-and-trace system in the UK has been flawed and there is at best only limited evidence that the tweet gives reliable information.

C. It also raises the question about the reliability of tweets, given that the number of characters is limited and that they do not allow much scrutiny.

D. Ultimately, consideration should be given to whether the compactness of knowledge affects reliability or whether it is about the fact that the communication is a tweet.

Quote from Margaret Thatcher

A. This quote from Margaret Thatcher has become infamous and is often used to remind us why Margaret Thatcher had the nickname of the "Iron Lady". This was part of a political speech that was made at a time when her popularity was quite low and people were questioning her ability to lead. Hence its original purpose was quite different, therefore questioning reliability.

B. This leads to consideration of the extent to which the phrase has been repurposed, thus questioning the idea of context and linguistic reliability.

C: It also raises questions about the use of language. In this case the word "turn" is used in both a negative and a positive sense, and therefore potentially undermines the reliability of meaning within language.

D. Ultimately, the quote raises questions about how context affects the reliability of language and who is using different linguistic tricks and for what purpose.

Case 4: Choosing the prompt and then finding three objects

In this case the objects do not relate to each other but all have a strong link to the prompt.

Theme: Knowledge and politics
Prompt 33: How is current knowledge shaped by its historical development?
Objects: Poster for the movie *Dr No*, Gutenberg's printing press, quote from Margaret Thatcher

Poster for the movie Dr No

A. Given that there is a new James Bond movie in 2021, *No Time to Die*, and with Bond movies having been around for more than 50 years, the poster of the first one, *Dr No*, gives us information about how things have changed.

B. The poster provides information about the history of a fictional character. The way in which James Bond has changed as a character is interesting. Over the years his relationship with the government, the way in which he interacts with other characters, and how he interacts with his adversaries and supporters have changed and provide information on the time period.

C. The early James Bond movies were often centred around plots relevant to the Cold War. As the main character is a government agent, they offer a historical perspective on aspects of politics, even though the character is fictional.

D. In one sense looking at the history of James Bond provides us with information about the real history of that time period. However, there are also challenges in how we determine the amount of embellishment to find the basis in truth.

Gutenberg's printing press

A. In this case the printing press is being used as a historical artefact. In a European context the invention of the printing press by Johannes Gutenberg was a particular invention that changed the way the world worked in the long run.

B. These sorts of inventions potentially change many different aspects of the world. In terms of political knowledge, the invention of the printing press led to increased literacy and increased education.

C. This changed how the political class was made up. With much more widespread access to education there were changes in how politics and government were set up.

D. Print media remains important today, especially within the law and politics, and this has its roots in the invention of the printing press.

Quote from Margaret Thatcher

A. This quote from Margaret Thatcher is used here as a historical source. There is plenty of evidence that it is a genuine primary source, but how it is used polarizes people's opinion.

B. Margaret Thatcher was the UK's first female prime minister and this quote portrays her as tough. It was Thatcher who led the way, some would argue, for there to be many more women in the UK government. Hence there is a historical legacy.

C. This quote also provides evidence that one of the ways for Margaret Thatcher to be successful was to be "more masculine" in terms of speech, and this speech was one of the events that contributed towards her becoming the "Iron Lady". This is one of the ways in which history now portrays her.

D. However, this quote is also representative of a time in the UK's history where major change happened (the reference to turning is about the policies Thatcher was trying to bring in) and resulted in the UK manufacturing much less and becoming a service economy; some would argue it was part of the foundation for Brexit.

Case 5: Choosing an object and then a prompt

Theme: Knowledge and religion
Prompt 10: What challenges are raised by the dissemination and/or communication of knowledge?
Object: Gutenberg's printing press

Gutenberg's printing press

A. Gutenberg's printing press was invented at a time in Europe when the majority of scholars were religious scholars. Prior to this the only way to copy books had been to copy them by hand. Although the printing press did not fully revolutionize printing (it was still very slow compared to printing today), its invention was seen as a major turning point in the modern European world.

B. The invention of the printing press allowed for the spread of religion, in particular Protestantism, through Europe and it increased literacy. Spreading religion had previously happened by becoming part of a religious institution or by word of mouth—most people could not read. The increase in literacy and the ability to reproduce information made the break away from the Catholic Church by Protestantism possible.

C. In the relatively short term the communication of religious knowledge became easier and allowed Protestantism to gain a foothold. However, in the long run it changed the role of those administering the teaching of religion, and how religion was seen.

D. The evidence for this is found in the teaching of history of this time period. History books and history websites exploring this era all mention Gutenberg's printing press and the short- and long-term effects it had.

Case 6: Choosing an object and then a prompt

Theme: Knowledge and indigenous societies
Prompt 14: Does some knowledge belong only to particular communities of knowers?
Object: Mount Taranaki

Mount Taranaki

A. Mount Taranaki can be seen as symbol of New Zealand (Aotearoa) through two different lenses. It is recognizable from different advertising campaigns and tourist literature as one of the most significant places to visit in the country. It is also part of Māori legend and is an important part of Māori culture.

B. There is a question about whether these different narratives (different forms of knowledge) belong to, or have significant relevance to, different populations. Looking at past times, there is an argument to suggest yes, as the indigenous and non-indigenous populations to some degree lived separate lives.

C. However, in present times there is a strong recognition that Māori culture has very much become part of how everyone in New Zealand wishes to see the country portrayed.

D. In one way this is over-simplifying the situation as the way the indigenous people were treated at the time of the arrival of the non-indigenous people was problematic. To this day there are still questions about power inequity and who has the power to do what. One argument is that Mount Taranaki is part of Māori culture and making it part of mainstream culture is a form of cultural appropriation.

Choosing more objects

For cases 5 and 6 you would now have to find two more objects that offered different perspectives on the prompt. The key to success with this approach is that the one object chosen does not have an overly great influence on what you write. By using this method it is likely that this first object chosen either has special meaning or you can see how apt it is to use with the prompt—it can be seen as a motivator. However, when you write the commentary, its influence on the prompt should be the same as the other two objects—it does not hold any greater importance.

Same object, different meaning

Now consider the objects that were used in more than one exhibition. This demonstrates that a degree of specificity is needed, but that this can manifest itself in different ways. The objects do not change but how they provide justification and what counts as evidence can change. You will need to think carefully about what the object is doing and whether minor modifications on the specificity need to be made.

Mount Taranaki

In case 1 the mountain is seen as a cultural symbol of New Zealand (Aotearoa), whereas in case 6 it is seen as two symbols, depending on the point of view taken. In case 1 the focus is on the country embracing its indigenous culture, whereas case 6 considers the idea of indigenous and non-indigenous cultures having a more problematic history.

Gutenberg's printing press

Case 2 points out that Gutenberg's printing press was a technological breakthrough, although its significance was not fully appreciated at the time. The role of the printing press in the rise of Protestantism is noted. In case 4 it is seen as a historical artefact that significantly changed the way in which the world worked. The focus on it in this case was the effect it had on the political world. In case 5 the focus is on the idea that at the time most scholars were religious scholars and books were copied by hand. The printing press played a part in the rise of Protestantism in terms of making its teachings more accessible. In the long run it changed the role of those administering the teaching of religion and changed how religion was seen.

Quote from Margaret Thatcher

In case 3 the quote is described as part of a political speech designed to boost Thatcher's popularity. In case 4 it has become a historical source often quoted as evidence of different aspects of her character.

SUMMARY

This chapter should have given you some ideas for how you can start work on your exhibition. Making initial decisions on the theme to provide the boundaries for the exhibition and making a choice on what is the right prompt for you are decisions you should make early in the process. Your choices of prompt are listed at the start of this chapter and on pages 40–41 of the IB *Theory of Knowledge Guide*. The choice of objects may take you longer to decide. A carefully thought-through choice of the prompt and the objects is what can give your exhibition a really positive start. With the right three objects the commentary will flow, but if there are problems with the objects then it will most likely become a problematic commentary.

This chapter has shown you how different objects can potentially be used and the level of specificity that is necessary. Once you move into the initial writing stage of the commentary, further changes to objects may be necessary. There are a number of reasons why this might happen.

- You may find that one of the objects does not say anything very different from one of the others, so that when you start writing the commentary you find yourself saying the same thing.
- You may find that one of the objects is taking you away from the main ideas of the prompt and that you are in danger of not answering the question.
- You may find that an object has the wrong focus. For example, let's say you choose a piece of music and use a photograph of the composer as an object. When you start writing, you find it is the way the musical score is written that is important. You can resolve this very simply by changing the photograph of the composer for a photograph of part of the score.
- You may find that the object is too generic and therefore you need to replace it with something more specific.

In these cases there is no harm is removing the object and adding something different. However, at this point you should have a relatively clear idea of where you are heading, so pick your new object with a view to what it is going to contribute. Remember that there really are more than a million objects out there for you to choose from.

You should now be in a position to decide on the theme, choose a prompt and decide on the three objects for your exhibition.

8 COMPLETING YOUR EXHIBITION: THE WRITING PHASE

In this chapter you will:

- ✔ follow your initial ideas on how to choose the theme, prompt and objects
- ✔ make those initial decisions, remembering that you can make strategic changes as you go along
- ✔ read some sections of exemplar exhibition commentaries based around different themes to provide some more ideas for reflection before handing a final draft to your teacher for comment
- ✔ reflect on your teacher's final comments and read three full exhibition commentaries to give you some final ideas for making the last set of changes before submission
- ✔ go through a final checklist to ensure that everything is in place—this includes guidance on what is required when you have finished your exhibition commentary
- ✔ begin to think ahead to the final stage, when you present your exhibition to an audience (such as your peers and possibly other members of the school community).

INTRODUCTION

In Chapter 7 you thought carefully about the role of the theme, prompt and objects, what they are required to do and what you are required to do. Now you need to work on the exhibition commentary.

As with the essay, you are now putting your initial ideas into place. As a reminder, for the exhibition commentary you must include:

- a title with the prompt clearly stated
- three individual images of the three objects
- a text focused on each of the objects.

As there are not many decisions to make about the structure of the exhibition commentary, there is no need for the same style of formal planning carried out for the essay. What you are doing now is:

- deciding on the theme
- deciding on the prompt
- deciding on the objects
- writing your commentary.

As with the essay, your teacher is required to give you final feedback on your draft commentary and this is likely to be in both written and oral form. After the feedback is received and discussed, your job is to make any final additions and changes. Once this is complete, you hand in a final version of your commentary to your teacher who will then mark it.

WORKING TOWARDS THE DRAFT

In Chapter 7 you learned about different aspects of the exhibition and spent time considering different ways of choosing your theme, prompt and objects. Lots of ideas were presented, and you should now go ahead in whatever way you decided is the best for you. Once you have selected your theme, prompt and objects, you can begin to think about writing your commentary.

At this point there are a few questions you should ask and continue to think about as you write your commentary.

1. Do all three objects explicitly link to the prompt?
2. Does each object have a real-world context?
3. Do I dedicate a reasonably equal number of words to discussing each object?
4. Are the links between each object and the prompt clearly made and well explained?
5. Are the contributions of each object clear?
6. Am I saying different things about each object or am I repeating myself?
7. Are the objects doing the job I want them to do, or do I need to make subtle changes?
8. Have I not only explained the contribution of each object, but also justified it?
9. Do I have evidence for what I am saying?
10. Am I still making explicit reference to the prompt?

All these questions are explored below.

1. Do all three objects explicitly link to the prompt?

This is a very important question and one that you should bear in mind throughout the writing process. As you write about each object, you have an opportunity to "reset" the prompt, but make sure that what you say always links back to the prompt or can always be linked to key concepts included in it.

2. Does each object have a real-world context?

Provided you have followed the guidelines in Chapter 7 this should not cause a problem. Firstly, this question is to remind you that your object must be specific, must not be made-up and must be able to be described clearly in words. Secondly, as this is a TOK course, it is essential that there is a focus on knowledge and this knowledge should link to the real world. This means each object should refer to things that impact on you or on society and they should be tangible. This is

not about theoretical or hypothetical knowledge. If you keep the links to the objects clear, then the knowledge under discussion should be of the right form.

3. **Do I dedicate a reasonably equal number of words to discussing each object?**

It is quite easy in an exhibition for one of the objects to dominate over the other two or for the third object to seem to be a last-minute addition. It is essential that all three objects have a role to play so that you have something significant to say about each of them. Therefore, your commentary on each object should be broadly similar in terms of length. Small differences are fine, but having a commentary on a single object of, say, 500 words or 100 words would be a potential problem.

4. **Are the links between each object and the prompt clearly made and well explained?**

In your commentary you need to make explicit links between each object and the prompt. There are a number of different ways this can be done (you will see different examples later in this chapter), but what is important is that you make the links. It should not be left to your teacher to try to work out what the links are or to decide between a few vague possibilities. Thinking about the key concepts in the prompt can help you with this.

5. **Are the contributions of each object clear?**

Again, as you saw in Chapter 7 and will see again later in this chapter, the contribution each object makes can be different. What is important is that you are addressing how the objects are interesting in relation to the prompt, how they are connected to it, how they link to it, how they illuminate it, how they make you think about it, how they make you reflect on it and so on.

It is important that you are not simply describing your objects, or telling your teacher why they are generally interesting. As you write about each object, do not forget this.

6. **Am I saying different things about each object or am I repeating myself?**

This is an important point to consider. When you were answering question 5, about the contribution of each object, did you find you were thinking about different things and making different links or was there a feeling that, for example, object 2 is saying the same as object 3? Do not mix this up with the idea that you might have undertaken some quite close analysis and therefore the underlying ideas will be similar. However, if you genuinely find that you are repeating yourself then think about some different links you can make. Of course, there is always the ultimate solution, which is to change an object.

7. **Are the objects doing the job I want them to do, or do I need to make subtle changes?**

This is closely connected to question 6. As you have gone about putting your exhibition together you will have been thinking about what you want to say in the commentary. It is quite possible that the broad brushstrokes of what you wanted to say were in your mind a long time before you started the writing. Therefore, as you write there will be some pre-conceived ideas of what you want to say. The question now is about whether your object allows you to do this. This is much more subtle than question 6 and the answer is not to change the object. However, you may

change the specificity of the object in order that it focuses in a certain direction. For example, rather than using the cover of a book you might choose a famous passage from the book. Rather than a photograph of the composer, you might choose to use part of the music's score.

8. **Have I not only explained the contribution of each object, but also justified it?**

As you have been writing the commentary you should have been making numerous links between the objects and the prompt. These may be continuous or in small sections. However, what is important is that within this you bring in an element of justification. This in part answers the why and how questions you ask yourself as you go along. It involves explaining why what you say fits well with the prompt. If you have noted any big TOK concepts, it involves what you are saying about those concepts and ensuring that it fits well.

9. **Do I have evidence for what I am saying?**

This is closely connected to question 8. As you are putting together your commentary, linking the prompt to each object, you need to think about the reasons why you are saying those things. Try to explain why your position or why your link is a useful thing to say. This is the role of evidence. Words and phrases such as *because*, *such as*, *this is shown by*, *from what I have seen*, *in comparison to* are all indicative of providing evidence. Also remember that the evidence you provide may go some way to producing justification.

10. **Am I still making explicit reference to the prompt?**

By the end of the commentary there is always a danger that you are losing sight of the prompt. You will already have said a lot about it by the time you come to your final object. Do not make the mistake of just describing this object, or indeed the others. Remember that there needs to be emphasis on the prompt right until the end.

Finally in this section, here are a few thoughts on introductions and conclusions.

Introductions and conclusions

It is possible to give an introduction to your commentary, but it is not a requirement. If you feel there is something important to say as an introduction—for example, if there happen to be links between the objects themselves—then there is no problem in providing a short introduction. However, you should remember that any introduction is part of your 950 word count and therefore you should ask yourself if it is the best use of the allocation. Do not add an introduction just for the sake of having one.

In terms of a conclusion, you should remember the bigger picture of what you are doing. You are looking at how TOK manifests itself in the real world by responding to a prompt. In the essay task you are required to argue to a conclusion, but this is not the case in the exhibition commentary. The prompt is by definition a very broad-based question. As you only have three objects and 950 words to use, what you are looking at is the different viewpoints, the interesting links and the analysis of those viewpoints and links as suggested by the three objects. You are not expected to reach a definitive conclusion to the prompt. Hence it is unlikely that your commentary will have a conclusion; in fact if you include a conclusion it is likely to indicate that you have misunderstood the task.

EXEMPLARS WITH FEEDBACK

In Chapter 7 you saw how different objects could be used in different ways and with different focuses. In this section you look at the way students have chosen specific objects to answer a prompt under the umbrella of a theme. These commentaries are mixed in terms of how successful they are. Some are very good and show some excellent TOK thinking while others are less successful and they have not reached their full potential. In each case feedback is provided, highlighting the positives and negatives of what the student has written and including suggestions for how it can be improved. Twelve commentaries are presented, two from each of the optional themes and two from the core theme. You should read each exemplar carefully and after each commentary make some notes on the positives and the negatives. Think of yourself as the teacher helping the student to write a better commentary on an object; what you would be advising the student in each of these cases. Then read the feedback and see how it compares to your own ideas.

It is likely that you will read at least some of these exemplars before you start writing your commentary in order that you get a better idea of what a commentary on an object might look like. You could also save reading some of them until you are part way through writing your own commentary, as you can then reflect on them with some hindsight. Equally, you might like to save some of them until you have written your commentary. In this case the idea is that by reading the mistakes made by others and by seeing some of the possible solutions, you will be able to find some of your own errors and fix them before handing in a final draft of your commentary to your teacher.

It should be noted that for all the commentaries presented, because of the word count, there is not the potential to extend them. Therefore any additions suggested in the feedback would need to be made by refocusing certain sections and/or tightening the use of language.

The feedback is there to point out what has been well done and what needs improvement, and to give ideas of how the commentary could be improved.

The feedback in the following section is not examiner feedback.

The words are for the most part taken from what students wrote and there are minor errors in grammar, spelling and punctuation.

Knowledge and religion

Exemplar 1

Prompt 33: How is current knowledge shaped by its historical development?

Commentary

The Hagia Sophia is today one of the most visited buildings in Istanbul Turkey and for many it is an image for which the immediate association is to the city itself. It was constructed in 537 AD and opened as a Christian Cathedral in the Byzantine Empire. As Constantine was the first Roman ruler to convert to Christianity, this artwork marks the beginning of the spread of Christianity in Eastern Europe. But in 1431 it was turned into a mosque by the Ottoman Empire. Because of the importance of the building for those who practice religion the immediate association to this building is primarily one of a particular religious faith. Arguably it goes further than this as Istanbul is traditionally seen as the city where east meets west in a cultural sense. Today the building is used as a museum.

What the Hagia Sophia represents to those who view it depends in part on its history. Buildings can provide us with knowledge and the way buildings are designed gives us detail of that knowledge. Modern day Turkey as seen by Ataturk is a secular state and therefore the decision was made to designate it as a museum to the culture of Turkey. It is a symbol of secular Turkey and the knowledge gained from the artefacts inside is about the cultural history of Turkey. However, the building has significance for both Christianity and Islam and some would argue that the building is part of a historical religious tradition. Its shape clearly designates it as a mosque, but without the minarets it could easily be seen as a Christian Church. Indeed throughout history this was a way to change Christian churches into Islamic mosques. This shows how our changing religious context might influence what we see. Because Istanbul straddles a Christian/Islamic religious world, is part in Asia, part in Europe and is culturally both European and Middle-Eastern, the Hagia Sophia also represents these things. Istanbul is a gateway, which is backed up by its geographical position on the Bosporus, and the history of the Hagia Sophia mirrors the history of Istanbul.

Feedback

The student starts with a thoughtful history of the Hagia Sophia. Presenting the historical context of the object is potentially a good approach considering the prompt chosen, but the focus on knowledge shaped by history should be clear. It is always important that the focus is on discussing knowledge and how your object links to your prompt, not just on describing your object. The real-world context of this specific building is clear—it is a building that has different meanings for different people and these are in part dependent on what is happening at the time.

In the second paragraph the student does make a valid attempt to address the prompt. It is clear that the student sees the Hagia Sophia as an iconic building and that its history is what provides the reasons for the different icons. This point is made quite clearly when the student mentions the fact that in modern-day Turkey the Hagia Sophia is officially no longer a religious building. The fact that it has become a museum is a clear statement that it has become secular. The idea that it changed from being a religious building of importance to two religions over its lifetime to something secular mirrors in part the history of Turkey. Finally, the student

tries to answer the prompt through the idea of this building being synonymous with the history of Istanbul—it is a gateway from the Bosporus just as Istanbul is a gateway.

Although the idea of using the Hagia Sophia as an object in this way is good, and it certainly provides a different perspective, there is a question over the extent to which it shines a light on the prompt. This is certainly about how the history of something mirrors the wider culture and how people see it as representing those changes. However, the prompt asks about knowledge being shaped by historical development, not just to tell us about the historical development. There is a question mark over what knowledge is under discussion in this commentary. Is it about the knowledge of Istanbul, is it about knowledge of the building itself or is it about knowledge of representation? This is never quite clear.

Using this object is clearly an original idea from the student that has potential, but it is one that could be seen as slightly tangential to the prompt; one where the link to the prompt is never made explicit. This is something of which you need to be careful. It is very easy to get carried away with focusing on certain aspects of the object itself; however, there must always be a clear focus on the prompt and its wording. Also, the fact that the student used the theme of knowledge and religion as the focus for the commentary was interesting, as knowledge and religion remained more implicit than explicit. With a little more thought on the idea of historical development in the context of knowledge and religion, this might have been more successful. This is not a commentary without merit, but it demonstrates the problems when there is not enough focus on the prompt.

Exemplar 2

Prompt 11: Can new knowledge change established values or beliefs?

Commentary

This object is a drawing of Pope Urban VIII and Galileo. There are many examples of Christian scientists whose religious world-views have helped create some of the greatest scientific breakthroughs, for example Isaac Newton. However, this object highlights a famous clash between religion and science – the clash between Galileo and the Catholic church. Galileo was put on trial by the Catholic Church for his scientific writings, particularly the ones where he supported a heliocentric rather than geocentric model of the universe.

In the natural sciences, knowledge is usually discarded if it has no experimental and repeatable proof, whereas this is not how is approached when people think about religion. Hence the world-views of the two can clash heavily in situations such as the one in this drawing of Galileo and Pope Urban VIII. Science has its own criterions for

something to be considered to be truth (such as repeatability), while religion's highest standard is faith. Because of this difference, even if there is new knowledge, it might not change people's minds or change their underlying beliefs and values.

This drawing also shows how difficult it has been throughout history for people to challenge beliefs and values when those beliefs and values have been held by powerful people and organisations such as the Pope and the Catholic Church. In this case it was one scientist, Galileo, against the Pope and the Church and all of the history and authority that goes with that organisation. This is similar to today where there are still people and organisations that have lots of power and influence. While new knowledge might change someone's view a little bit, in my experience it very rarely changes their values and beliefs very much at all. Perhaps this is because they are very hard to change. Or perhaps it is because the viewer doesn't ever see the full scope of the grand and complex picture in front of him.

Feedback

In the opening paragraph the student has made a definitive statement about what the object is and it is implied that there is a link to the prompt. However, this opening paragraph could be much more specific and direct. The object is a drawing, and although that fact is mentioned, it would be useful to know the context for the drawing. This is where the specificity of the object becomes important. The fact that it is a drawing where there is a conversation between Galileo and the Pope is worth mentioning along with the nature of that conversation; there may also be something to say about the artist. At this point the student seems to be more focused on the example of the event – the disagreement between the Catholic Church and Galileo – rather than the object. Is it the subject matter of the drawing or the drawing itself that is the focus here? The specific real-world context of the object is not clear. There is also an indirect link to the prompt itself, as the argument over heliocentric versus geocentric models was ultimately a case of new knowledge challenging established beliefs.

The student then explicitly looks at the different sorts of knowledge we get from natural sciences and religion (although what we get from religion is by implication the opposite of science, the student does not tell us). The student would not be penalized for looking at natural science although it is an area of knowledge. Scientific versus religious discussion would definitely fall under a theme of knowledge and religion, and the theme is doing its job of providing some parameters for the discussion of the prompt. The student goes on to discuss the situation rather than the object. Reference is then made to criteria for science and religion—truth versus faith. Although it is clear where this is coming from, it really needs a little more evaluation to be effective. The student does try to make the link back to the prompt, suggesting that there are reasons why the prompt may be questioned. There is definitely an attempt to keep focused on the prompt, but what the student has given here is not in enough detail and there is not any appropriate evidence.

In the final paragraph there is an attempt to refocus on the object itself. However, what is said is more questionable. The student says that the drawing shows that challenging beliefs held by the powerful is difficult. It is not clear what it is about the drawing that says this. Once again, the focus on the real-world context of the object is missing. The focus is now on power, which is potentially fine but a more direct link back to the prompt is needed. The student needs to be answering the question: "What does this say in answer to the prompt?" The statement about new knowledge having limited impact is rather general and was said before, in a slightly different context, in the second paragraph. Some reasons for this are now given, which is helpful, but the evidence is limited.

In the end this commentary is not without some merit, but it is flawed. To summarize: the real-world context and the reason for including the object are never made clear, and the response to the prompt is not detailed enough and not fully linked to the object.

Knowledge and indigenous societies

Exemplar 1

Prompt 14: Does some knowledge belong only to particular communities of knowers?

Commentary

My first object is a picture of a traditional Polynesian facial tattoo. Traditionally these tattoos were used to express all sorts of information about the person such as status and identity. This is an example of knowledge that is dependent on culture and belongs to a particular community of knowers because the tattooists served as apprentices and knowledge was passed down from generation to generation within the culture.

Many of the techniques used to create these Polynesian tattoos are still used today, and while they might be similar to other tattoos, the deeper meaning behind the shapes and the placements of the tattoos would only be known to people from within the culture or people who have studied the culture a lot. When I look at this picture of the tattoo I might see this as linked to people who have been in prison or to younger people making a statement about society – I am an outsider and I am interpreting my knowledge of this tattoo from a stereotypical outsider's perspective. If I was part of this Polynesian culture my knowledge would be far greater (I would know this kind of tattoo doesn't just inject ink into the skin – it is actually more like carving the skin before the ink is put in and that it represents high status), would be shared with others in my culture but quite probably not with those from outside. In terms of knowledge, the distinction between outside and inside is relevant and supports the argument that a certain type of knowledge only belongs to particular communities of knowers.

In some places in Polynesia the spread of Christianity led to a decline in these traditional tattoos, as the culture and knowledge of one group was being imposed on another group. If they had disappeared completely then this knowledge would have been lost. This shows how fragile this knowledge is, exactly because it only belongs to this one particular group of knowers.

Feedback

The student makes it very clear in the opening what the object is. The reader is also told something about the cultural context of how these tattoos are used within Polynesian culture. The point is also made that the culture is what allows us to make sense of the tattoo and the tattoo provides us with knowledge of the culture. This is definitely a link to the prompt. The fact of the tattooists serving as apprentices and as a way of transmitting aspects of culture is well noted. This is a fine introduction, but from now on the student will need to investigate the prompt more deeply.

The second paragraph starts by setting up the argument that there may be a cultural distinction when it comes to tattoos. The idea that an outsider has one understanding while an insider might have a different understanding is a relevant point, as is the recognition that one viewpoint may be stereotypical. This is set up quite successfully: some form of explanation is given about the link between the object and the prompt, which suggests that there is evidence for what is being said. The end of this paragraph brings the object and the prompt back together and this involves an element of justification.

The third paragraph brings in the idea of colonization through religion. This is hinting at the idea that this type of knowledge has a degree of fragility to it and that certain types of knowledge do have the potential to exert power and take over. There is quite a lot going on here in terms of links to the prompt, but much of it is left for the reader to deduce. Therefore, it would be a good idea if there was a stronger degree of explicitness in this final paragraph. This could also have led into a brief discussion about the importance of preserving such forms of knowledge, which means there is a need to promote them beyond the particular knower.

Overall, this is a good treatment of an object. It is firmly grounded in the theme of knowledge and indigenous societies, and the fact that the student has used that well has brought a degree of specificity and analysis into the commentary. The initial paragraph establishes why the object has been chosen and how it links to the prompt, then the second paragraph analyses this further and provides a degree of justification and evidence. There is a genuine attempt to focus on the object and to link it to the prompt. The third paragraph has the potential to cement the argument together strongly, but it just misses doing so. Overall, this is focused and relevant. With a few changes to the third paragraph and slightly less detail in the second paragraph, this would have been excellent. In its current form it is still a good commentary.

Exemplar 2

Prompt 17: Why do we seek knowledge?

Commentary

These are the Salangai, bells that I wear on my feet when doing Bharatanatyam dancing. The Salangai help draw the attention of the audience to the movements that your feet are making. They also represent the power the dancer holds when performing. The execution of the steps and movements must correlate to the music and mood of that moment. For example, when happy or excited, the dancer will emphasise the footwork by making the Salangai louder.

But why did I want to learn this type of dancing and learn to use these Salangai? Why did I seek this knowledge? I had watched my sisters and aunts do this kind of dancing and I had experienced how Salangai helps the audience's understanding of the dance. Firstly, this is about expressing emotion and understanding emotion. For example, to show sadness the dancer may walk slowly and then stop so that the Salangai is quiet. The Salangai combine with other aspects of the dance to communicate emotion. By learning more about this and doing this dancing myself I now know much more about how knowledge is used in it so that it is in accordance with the music, with the proper use of adavus (steps) and mudras (hand gestures); it is also important to keep in mind what they represent, and communicating the Hindu story that the music tells. In terms of knowledge I know what I am communicating and how to do it

This type of dancing is part of Indian culture and Hindu culture and is part of what differentiates the Bharatanatyam community. It is important to keep cultural traditions alive and to remember that these cultural traditions were a way of expressing difference during colonial times – for me learning Bharatanatyam dancing is to understand part of my history. As the Salangai is such an important symbol of this style of dancing, it can be seen as a historical artefact. I feel it is important to understand the past in order to be able to appreciate and understand the present and hence seeking this form of cultural knowledge is important.

Feedback

The student gives a clear description of the Salangai and how they are used—a real-world context for the object is established. In this case the description of how the Salangai are used is quite important as it clearly sets up the connection to the next section on how the object links to the prompt.

The student then moves into looking at the prompt and suggests that an initial reason why we seek knowledge may be about emotional knowledge. From the opening paragraph there is a strong sense of understanding how the object can influence this. It is all linked to the idea that emotional knowledge is not easy to communicate and there are various aspects to seeking this

knowledge. More could have been said on this. There is also a hint that understanding knowledge here is a two-way process, meaning there is a role for both the performer and the audience. There could also have been further exploration here.

The third paragraph looks at the prompt through the idea of cultural knowledge. The idea of dance transmitting knowledge and being a part of communication is effective. The link to history and colonialism is also an interesting position to take. The idea of the present being understood through the past is a good position to take for understanding why we seek historical knowledge, but to be fully effective this needs a little more detail. The same reflections apply to the student's ideas on historical symbols.

Overall, there is a degree of specificity in terms of what is being communicated so there is a good focus for the exhibition. Further consideration of the idea of seeking knowledge would also have been helpful.

Knowledge and technology

Exemplar 1

Prompt 31: How can we judge when evidence is adequate?

Commentary

Detroit: Become Human is a video game released in May 2018 and is a choice-based RPG that allows the player to play as three different androids and decide their futures as an android-rights movement emerges, akin to the Civil Rights Movement in the USA. In the game, the citizens of futuristic Detroit must decide whether they should accept the androids as an equal part of society, which they do when the androids show empathy. The game (or at least one of its many endings) suggests that androids and AI should be considered equal to humans if they can show empathy, which many consider to be a distinctly human trait. This suggests that it is emotional intelligence that sets humans apart from AI, and if the androids are able to develop and display this then they should be considered equal to humans.

Major advancements in technology in recent decades have led to scientists getting closer to developing sentient AI, so this issue is more pertinent now than ever before in human history. If and when these AI become part of our society, humans must consider if we should deem the machines that we have created to be equal to us. Many argue that if we are to develop such technologies - that are equally sentient to human beings despite being non-human, then we are morally obliged to grant equal freedoms to them, an issue that has been debated by ever since the first computer was created.

Feedback

The exhibition starts with a clear description of what the object is and effectively what the object does. The fact that a decision has to be made on the basis of the end point is quite important. The student notes what that end point is—the idea of androids showing empathy—and then draws a conclusion on what the final decision is based upon. Thus there is a strong description of the real-world context of the object, but at this point no reference to the prompt is made. It is clear from what is said that this object can be linked to the prompt, but it would be helpful if that link were explicit. What the student says shows there is an awareness of the word *evidence* in the prompt, but the idea of this being some sort of judgment is rather lost. For this to be effective, a link needs to be made between the concept of evidence and both empathy and emotional intelligence. Within the first paragraph the idea of what sort of evidence is adequate is not addressed.

The first sentence of the second paragraph explains why the subject matter of this video game is important. This is a good point to make, but in making it the student needs to be clear about how it is directly addressing the prompt. Once again, readers can come up with their own reasons, but this is problematic as marks cannot be awarded for what it is thought a student might be saying. The second sentence adds little as the reasons behind the importance of the decision have already been made in the first paragraph. The student then moves on to the idea that we have a moral obligation to act. This is the first introduction to an ethical perspective and again for this to be fully effective it needs to link to the prompt. The idea that this has been debated since the invention of computers is a weak way to finish.

Overall, this is a rather short commentary and additional words up to the 950 limit could have been used to make a more explicit link to the prompt. The object is fine, but had a specific ending to the game been chosen as an object, where an android exhibits specific human characteristics, this might have allowed the student to focus more on the prompt. The key words in the prompt are *judge*, *evidence* and *adequate*. The student makes no attempt to link any aspect of the object specifically to any of the key words. This is certainly a commentary with the potential to be successful, but as it stands there is too much left for the reader to decide. Ultimately, justification and evidence are both missing and what makes evidence adequate is never addressed.

Exemplar 2

Prompt 20: What is the relationship between personal experience and knowledge?

Commentary

A significant portion of our personal experience involves visuals and many of these are captured using technology like this photos app on my phone. I have included this photos app in my exhibition for two reasons. Firstly, we have such huge dependency on objects such as this as they have actually changed the way that we experience the world. For example it has changed how I learn and know in the classroom. When my teacher is writing down a complicated piece of mathematics, rather than hurriedly scribbling notes, I take a photograph and work though the photograph in my own time. It has allowed me to be more in charge of my own learning – my own personal experiences of knowledge. Secondly, a vital part of the relationship between personal experience and knowledge is our human memory. Our memory is our knowledge of our past personal experience and people often tend to rely on past photos. Because of the app on the phone I now take photographs endlessly. Today my phone is almost a running memory in itself, whereas in the past my memory was a set of disconnected glimpses.

Also, being a serious photography hobbyist, I enjoy the process of crafting a photo and a story using my digital camera. However, I have noticed that shots I have put an effort in constructing meaning and artistry often have a stark contrast with the photos I take with my phone every day. I realised that I do not have a strong recollection of what I take on my phone every day, but remember shots or photos that I have "constructed" with my photography techniques and equipment. Therefore for me photography has quite different meanings. As a form of artistic knowledge where the crafting of the photo is key and knowledge of technique becomes important, this is associated with a digital camera. However, knowledge for the purposes of sharing, memory, and learning are immediately associated to my photos app. For me this app allows some very personal experiences to become group experiences and in some cases personal knowledge becomes shared knowledge.

Feedback

The student has started with a clear introduction as to what the object is and what its real-world context is. The student notes how much this has changed world experience. This is then exemplified through a concrete example of learning mathematics and the student has noted clearly that this is evidence of personal experience.

The second example provided is about memory and how the smart phone has changed the reliance on memory. This is again clearly about personal experience and knowledge, although some specific detail on what sort of knowledge is under discussion would be helpful. This is a good example of where a student has managed to keep the focus on both the object and the prompt, although it could be said that a little more depth in the argument would be helpful. The student now goes on with a comparison that is still directly linked to the object and the prompt, but takes a different direction. The student looks at digital photography more generally, suggesting that with a digital camera the knowledge used and in

part gained is more artistic and more likely to be remembered. In terms of the photographs from the photos app, these are not seen as part of art but very much personal knowledge. A little more specificity on what is meant by knowledge in this context might have helped further but it remains a good example.

It is worth noting here that it is the degree of specificity that has allowed the student to craft a thoughtful section of commentary. Had the student simply chosen a more generic i-phone, there is a real danger that this would have been more about technology rather than knowledge. The fact that the student chose the photos app is what has allowed more detail to be placed on the sort of knowledge this enables.

Knowledge and language

Exemplar 1

Prompt 18: Are some things unknowable?

Commentary

My object is a set of greetings cards where the concept of "Hygge" is the central theme. Danish 'hygge-culture' has gone global. 'Hygge' is an untranslatable Danish word. I've tried to express what hygge means to me as a native Danish speaker, but I have found it impossible to explain exactly. I've seen articles and books on the matter, but I don't think it is something you can know by reading, only by experiencing. My foreign friends ask me what to do to attain hygge, but it's not something you do, it's something you recognize. Having a word 'hygge' facilitates this. It allows me to appreciate the 'hygge' in daily life. The word influences what we notice and how we interpret our everyday. I know what it is but I cannot explain it in other words.

These set of greetings cards made me wonder whether someone who is not Danish can really ever know what hygge is, or whether this is an example of something that is unknowable to some people. It made me wonder whether hygge is only truly known by people who speak Danish and are Danish and is at some level unknowable to anyone else. According to the website "lexico", hygge is defined in English as "a quality of cosiness and comfortable conviviality that engenders a feeling of contentment or well-being." For me as a Danish person, that it is very similar, but it is not exactly the same thing as hygge. But when I try to explain what exactly is different to my foreign friends, I can't. This makes me wonder whether if it is possible to truly know something if you do not have a word for it, or whether words that are untranslatable, such as hygge, might be examples of things that are unknowable for people who do not speak that language.

Feedback

The student has a clear statement on what the object is and has backed this up from personal experience. The fact that no direct translation is offered by the student is evidence itself that the answer to the prompt in a very specific sense is yes. The idea that you need to experience or recognize the concept is an interesting position to take as it carries with it the implication that this is how we know things. Hence if you experience or recognize hygge, then you will know. This is an argument where the conclusion does not necessarily follow from the initial statement. Up to this point in the commentary no reference has been made to any aspect of the prompt. Although the in-depth look at the prompt would not necessarily be expected at this point, there still needs to be some explicit reference made. The student finishes by suggesting that having a word for something helps the recognition. There is a danger of the student ending up in a circular argument, suggesting hygge is an experience or recognition for which having a word helps, but the word cannot be translated; therefore, hygge is a feeling or experience.

The second paragraph sets up a discussion about the idea of unknowable and then goes on to suggest that hygge is potentially unknowable to those who do not speak Danish. It is good to see the student making an explicit reference to the prompt, but there is a lot of repetition. Had the student introduced the idea of unknowable in the first paragraph, much of this second paragraph could have been incorporated into the first paragraph. The commentary then goes on to offer a translation into English, but the student suggests that it is not fully correct and they cannot explain it to their non-Danish speaking friends. The final sentence adds nothing new and repeats what was said earlier. Overall, this was a commentary with potential, but the potential was never fully realized.

After a promising start, this commentary rapidly becomes a series of repetitions using slightly different vocabulary. Before you begin your commentary it is always worth thinking carefully as to whether there is enough to say about each object. There are implications that there was not enough to say here, given the degree of repetition.

This object could have been used successfully and here are a few thoughts on how. An earlier introduction to the idea of unknowable would have helped as this would have allowed the student to put the two paragraphs together and overcome the repetition problem. Different perspectives on this might also have opened new lines of enquiry. For example, to what extent does "unknowable" change across culture, age and accent spoken? Further work could then have been done by looking at this from the perspective of a person who speaks no Danish and then someone who does—this might have allowed a "compare and contrast" to provide some evidence. There also needed to be more of discussion on what we do and do not know.

Exemplar 2

Prompt 23: How important are material tools in the production or acquisition of knowledge?

Commentary

This object is one of the character practice sheets that I use when learning Mandarin. A character practice sheet symbolizes gaining knowledge through repeated practice of writing Mandarin and can therefore be classed as a material tool. There are specific stroke orders for the Mandarin language and these need to be remembered accurately – the character practice sheet helps you to do this. By practicing, people are further familiarizing themselves with the language. They are directly seeing any errors made in their knowledge and correcting themselves. Then, they justify the corrected knowledge by continuing to practice until they know that their knowledge is reliable. This is something that helps with memory which is a really important part of language acquisition when learning in this way. Even if the members know Mandarin well, without practice, they will not be able to completely master the language.

The fact that we use this material tool at all in Mandarin class also shows how different learning Mandarin is from learning some other languages such as English or Spanish. This to do with the nature of the language and the fact it has no alphabet. Knowing the characters is important and takes practice.

However, practicing on one's own is not the same as being fully immersed in the language. So although this tool is important, it has limitations when it comes to giving us knowledge of the Mandarin language. Knowing the grammar of Mandarin and meaning of words is not enough: it is also important that we are exposed to Mandarin-speaking societies. In reality, a person must be exposed to the language completely and learning to speak is a different issue with the importance of tone coming into play. In this case the material tool is not useful and the learning of the whole language continues need a variety of approaches, which could include other material tools.

Feedback

The student begins with a clear introduction of the object and its real-world context. The idea that Mandarin is a very different language from others this student is familiar with comes across, as does the importance of the characters and therefore the need for the character practice sheets. However, the student points out that this is a guaranteed way of successfully learning Mandarin and it is therefore a strategy that helps. This is effectively built up in the commentary with more detail being provided to the reader when necessary, not as a single paragraph. By the end of the commentary there is a strong sense of the object and its specific real-world context is clear.

The student then manages to explain why this is a material tool. Part of the unpacking of its real-world context in this case also explains the link to the prompt. The student succeeds in identifying two important

reasons for working with character practice sheets—learners need to be accurate with their use of characters and they need to remember the characters. The idea that learning a language such as Mandarin is quite different from learning a language such as Spanish is a point well made and adds something to the justification for inclusion. However, it could also have been used more effectively in answering the prompt—focusing on the idea of material tools for all language learning and how the tools might differ.

By the end there is evidence to support points made, but a little more specificity in what is being said would help. The final paragraph on the idea that this is not the full story is worth including as it helps the student to answer the "how" part of the prompt. It is not just about the role of material tools, but "how important" they are. The difference between learning written and spoken language is made clear, as is the fact that there is the added complication on tonality in Mandarin.

This is a well-constructed section of commentary where both object and prompt are at the forefront, and the student manages to keep both of them there throughout most of the commentary. There are one or two lapses in terms of how material tools could work together and what a range of material tools might look like in order that they become important. Nevertheless, this is a thoughtful and focused commentary.

Knowledge and politics

Exemplar 1

Prompt 22: What role do experts play in influencing our consumption or acquisition of knowledge?

Commentary

This photo is from my history textbook. It is a picture of Gavrilo Princip, who was the man who assassinated Archduke Franz Ferdinand in 1914, often seen to have led to the outbreak of World War One. He is blamed by some for causing World War One. Gavrilo Princip is an example of someone different people view very differently, with some people seeing him as a hero and others seeing him as a violent assassin.

There are particularly differences in how people view Princip in terms of people from Bosnia versus people from Serbia. In Serbia he is seen as a nationalist hero and freedom fighter, whereas in Bosnia he is seen as a violent criminal assassin. So for example when Bosnia built a big statue of Archduke Franz Ferdinand, Serbia then responded by building a big statue of Princip, to show that they see him as a hero and freedom fighter. This object shows that often different people will have different opinions over how someone is regarded and often that opinion is influenced by how that person is presented to them by their education and particularly by experts in their textbooks.

The way that people are presented in textbooks can influence whether we think of them positively or negatively. Often there is disagreement over whether someone should be seen as a freedom fighter or as a terrorist. Which of these two terms is used to describe someone in a textbook makes a massive difference to how we think of them. But is there always a clear reason why the textbook writer decided someone is one or the other? I don't think so.

Gavrilo Princip is often presented in history textbooks as being responsible for World War One starting, which makes us think of him negatively. But in textbooks in Serbia maybe historians present him differently, as fighting for the freedom of Serbia. If so, students in that country might be more likely to think of him as a freedom fighter because of how experts present him to them in textbooks in Serbia unlike other countries.

Feedback

The student begins with a clear statement of the object (in this case a human being) and why this man should be singled out. Sentences two and three in the first paragraph imply different things in terms of his role in the First World War. In the first sentence the outbreak of the war is attributed to him and in the second he is blamed for the war. Although the object is clearly described, how it links to the prompt is not addressed in the first paragraph.

The second paragraph begins where the first one left off with more detail on who Princip was—this might have been better incorporated into the first paragraph. Descriptions are then given about the statues built in the different countries for different reasons. This establishes the idea that there are clearly different viewpoints, and that this is from what history and politics have to say about him. There are a few things to note here. This paragraph probably needs to be much more concise, with the information given in fewer words. It takes too long to establish the link to the prompt. This is a good example of why you are asked to answer the prompt within the boundaries of a theme. The theme here is designated as knowledge and politics, but the student is not using it and the initial two paragraphs remain rather general.

The first sentence of the third paragraph is the first direct reference to the prompt. The second sentence takes the reader a little further, suggesting that different perspectives are actually about the use of language and that the choice of language is the choice of an expert. It is only at this point that an explicit link has been created between object and prompt. The last two sentences of this paragraph leave the reader in a degree of confusion. A question is asked about intention and the answer "I don't think so" is given. In terms of the prompt this is rather unhelpful as the reasons behind that position are what might start to provide insight into the prompt. In the fourth paragraph the student returns to the theme of the first paragraph and very little is added that has not been said before. Asking and answering the questions: "How do experts ensure specific viewpoints?" and "Why are students in a country more likely to believe experts who write textbooks in that country?" might have been a more profitable way forward for the student.

This is a case where the student has spent too long introducing the object and the situation of the object and it is suggested that what

is written in total would ideally fall into a first paragraph. The contribution of the object to answering the prompt is never directly tackled. As no real viewpoints on the prompt are provided by the object, the idea of the student providing evidence is never achieved.

Exemplar 2

Prompt 12: Is bias inevitable in the production of knowledge?

Commentary

This object is a demonstration for a lawsuit filed against Harvard by the SFFA (Students for Fair Admissions) on the grounds of discrimination against Asian Americans. In the lawsuit, the SFFA claims that Harvard violates the Civil Rights Act of 1964 and attacks Harvard's discrimination of East Asian applicants on the basis of employing racially and ethnically discriminatory procedures in administering the undergraduate admissions program. They make reference to admissions officers' comments on Asian applicants, labelling them "lacking in personality" and "boring".

It would appear that there is only side to this argument from the perspective of the SFFA, but in reality there are two suggesting there is a degree of political and ethical bias involved. The SFFA claims that college applications should no longer consider applicants on the basis of ethnicity and hence this information is not needed. From an equality perspective ethnicity should have no role to play. However, it is not that simple as it would appear as it has the consequences of stopping affirmative action. This is where ethnicity plays a role but from a positive perspective where students are chosen to diversify campus population and equalize the inequality of the socioeconomic landscape of America. Thus by removing information on ethnicity, there is the danger that campuses become less ethnically diverse.

Thus whichever way you look the position is biased. On the one hand stopping decisions based on ethnicity is good and it could be argued that affirmative action is problematic as choosing acceptances based on ethnic descent is a form of systematic racism and setting ethnic quotas does not necessarily equalize socioeconomic inequality. On the other hand affirmative action has been around for a while and is generally seen to have had a positive impact. Therefore in this case it is clear that political bias could be positive or negative and is inevitable. Despite the fact that I am Asian American myself, I think that affirmative action is a necessary process in the college admissions process precisely because bias is inevitable at a systemic level; the bias is not necessarily a bad thing.

Feedback

The student has become a little tied up in this commentary. The object is a demonstration in support of a lawsuit filed by a group called students for fair admissions (SFFA) suggesting that Harvard discriminates against Asian students both racially and ethnically. The first paragraph takes a long time to say that and even at that point the real problem is not explained. At the end of the first paragraph the comment from the admissions officer is added.

It would certainly have a part to play in the lawsuit, but it does not really add much to the TOK commentary. In the second paragraph the student manages to explain that although making decisions based on ethnicity is often seen as problematic, by removing information of ethnicity and race you also remove the possibility to use this information for positive reasons—in this case the example given is affirmative action. The student is trying to set up two sides of an argument. The problem here is that the object is not really doing a very good job. The idea of different sides is set up by the demonstration, but not in any detail. As it is the wording in the lawsuit that is really the focus, it might have been more successful had the object been linguistic extracts from the lawsuit. Equally, an object related to affirmative action might have worked better.

At the start of the third paragraph reference is made to all positions being biased, but it is not made clear what sort of bias this is. It might have been useful to look at the degree to which the bias is positive or negative and also possibly consider the difference between conscious and unconscious bias. As the paragraph progresses, the student mentions that this is a case of political bias. This is a potentially effective line of argument, but it is not pursued any further at this point. The fact that the bias could either be positive or negative is also noted, but again not taken further. It is clear that the student has some understanding of bias, but the way the object has been set up hinders a clear link between object and prompt. The rest of the paragraph is then taken up describing the student's personal position on affirmative action.

Overall, this is an example of an object that has not been fully successful because it is not linking well with the prompt. In this case a lot of time is spent explaining the complexity of the situation as opposed to looking at positions on the prompt. There is a genuine attempt to involve the prompt and to keep it in the realms of the theme, but ultimately too much time is spent explaining what the object actually is. In the end not much is really said about bias, and how it is related to knowledge and politics remains implicit.

Knowledge and the knower

Exemplar 1

Prompt 7: What are the implications of having, or not having, knowledge?

Commentary

My object is my lifeguard T-shirt. It is part of my lifeguard uniform which includes this shirt which has lifeguard in bold letters on the back. This object serves as an identifying factor for all lifeguards. As a lifeguard, when the shirt is put on, I have different responsibilities, as it is known that the lifeguard is the one with the knowledge to act appropriately in a situation. It represents the responsibilities that a lifeguard takes on when they wear the shirt because in any kind of emergency the lifeguard is the one qualified with knowledge to act appropriately.

I included this T-shirt because being a lifeguard is an example where having or not having knowledge is literally a matter of life or death. In the case of a lifeguard there are implications for the lifeguard themselves and the people they are guarding. Everyone recognises the lifeguard uniform and understands that when a lifeguard blows the whistle to pay attention and follow instructions. Therefore through seeing me in my uniform they have the knowledge that they are protected and the shirt is the symbol of that protection. As a lifeguard, we have to have knowledge about how to appropriately use all the equipment and how to apply it in different situations. For example, all lifeguards have knowledge of CPR and first aid. In certain situations like this the idea of knowing how is therefore very important. Overall what makes this important for both me as a lifeguard and the people I am looking after is the fact that we are a community and within that community both sets have knowledge and the mixing of that knowledge ensures that people stay safe. In lots of other much more personal situations having or not having this sort of knowledge may still have consequences, but not with the same level of responsibility.

Feedback

The student starts out with a clear statement of what the object is and the second and third sentences explain the real-world context. A few more details are provided on this and the student sets up that this object is in part about responsibility. It may be that these last two sentences could be more concise if more words were needed later to provide evidence or justification.

The second paragraph begins with a sentence that shows there is a direct link between the object and the prompt. In the second sentence the student indicates that there is more than one side to the argument and there will be different points, thereby providing a degree of justification for the inclusion of the object. First, the knowledge signified by the shirt to the public is noted. The symbol implies that everyone in the water knows that there is protection.

Then there is the situation of the lifeguards themselves. The shirt is in this case a symbol of their ability to "know how to do something"—in this case CPR and first aid—it is this idea of "knowing how" that is implied. The student finishes by implying that this is important because all the people in the water effectively form a community and it is this community knowledge, which is of overall safety, that is represented by the shirt. The student then hints that in more personal circumstances the responsibility will be different, although how this works in practice is not articulated.

Overall, this is a good commentary. The real-world context is clear and the link to the prompt is made. Some attempt is made to look at different forms of knowledge from the perspectives of different viewers, which is part of the justification for the object making a contribution. The fact that these different forms of knowledge can be articulated is indicative of evidence. This is a good example of

why the object should have a degree of specificity, as it allows the student to talk about aspects of knowledge with that specificity. The fact that the last sentence could do with further expansion and explanation suggests that a slightly tighter first paragraph would have been appropriate.

Exemplar 2

Prompt 2: Are some types of knowledge more useful than others?

Commentary

This object is a Fantasy Football calendar. Fantasy Football is about setting up a line-up to get the most possible points for a certain week. In Fantasy Football there are many different types of knowledge to draw on. A logical follow on from this is to ask whether some types of knowledge are more useful than others in helping me to set up my Fantasy Football line-up.

One of the most useful types of knowledge in Fantasy Football is statistics. Statistics constituted as yards and touchdowns are based of the player's performance. These statistics are of past weeks and a player's projected number of points. I do, however, have to be careful how I use those statistics as they only provide limited results on limited data. Another useful piece of knowledge is match-ups. Matchups arouse questions of the opposing team's defense, and how the player's opponent affects his point production. In some instances, no matter how talented a player is, the fact that he is going against a tough defense hinders him from being a starter.

Fantasy Football shows that specialist knowledge can be very useful. But it also shows that sometimes there are other unexpected things that are very important and useful to know as well. For example, in Fantasy Football one of the most important things is knowing injuries. Injuries are key in setting up a formidable line-up because no matter how skilful a player is, if he is injured, then his hopes of being started in a line-up are hopeless.

The knowledge-making processes for Fantasy Football is the ability to be cognizant of all the factors that play a part - these are called projections. Team owners look at each player's projections and use them to set up a lineup that he or she thinks is going to be successful for that particular week. A player's projections are based off many factors, some being statistics, injuries, and of course, matchups.

Feedback

The student starts with description of what the object is and what role it serves. It is worth noting that the student has not produced an image of their own fantasy football calendar. A strong link to the prompt is set up by the student suggesting that different types of knowledge must in some way lead to different degrees of usefulness. As an introduction this is well put together.

The student then lists the different forms of knowledge that can be used in Fantasy Football. The list begins with statistics, explaining

where they come from and also noting that they need to be handled with care as they do not tell the whole picture. It would be helpful to know what was "useful" about this knowledge and also how it compares to the other forms that are used in Fantasy Football. This is followed by the idea of match-ups. Again, it is easy for the reader to understand why this might be useful, but whether it is more or less useful than statistics is not stated. The student then brings up the idea of things we cannot predict, such as injury. This brings in a different dimension of a type of knowledge, but not much is made of this and there is limited exploration. It is also possible that these things are useful in different ways, but again that possibility is not explored. The commentary ends with the idea of projections, which seems to be about a range of different useful types of knowledge. In the end the prompt is mentioned several times, but the context in which it is mentioned remains the same and the reader does not get a strong sense that the students understands "useful". This is a commentary that takes you so far and then stops.

Overall, the student struggles a little here with the idea of useful knowledge and the idea that there is the implication of a hierarchy. Part of the problem here may be related to the object itself. It has a degree of specificity, but maybe not enough to tease out what sort of knowledge is useful. Had this been a personal calendar, rather than a generic calendar, it might have been possible to say what types of knowledge could be more useful, as the student could have articulated how they themselves use it, why they use it and when. Ultimately, the reader is never quite sure what was really meant by "useful".

EXEMPLAR EXHIBITIONS

The section above should be used to reflect on what you have written as your initial draft and it is likely that you may want to make some changes. Once you have made those changes you will have a final draft and this needs to be handed in to your teacher for feedback.

Once you have received your feedback you should read it carefully and reflect on what needs to be changed. There is nothing to stop you going back to an earlier section in this chapter, or even an earlier chapter, to gain more ideas or look for further explanation or advice. However, if the advice from your teacher suggests that with the exception of some minor rethinking your exhibition commentary is close to complete, then it is suggested you undertake a final activity.

In this activity you look at three complete exhibitions and think about how they compare to what you have written. All three of these exhibitions scored highly. Once you have read them, make some notes explaining why you think they achieved a high score. Then read the commentaries on the exhibitions and compare what you have said with the commentary.

The themes considered here are:

- knowledge and the knower
- knowledge and technology
- knowledge and language.

All three of these exhibitions can be described as excellent, but they have been chosen because they are not perfect. Obviously there is a range of exhibitions that can score full marks and the top full-scoring exhibitions are quite exceptional. However, by definition only a very small number of you will ever be able to attain this. This is why three solid exhibitions have been chosen that while still described as excellent also contain flaws. Most exhibition commentaries that score ten out of ten are neither flawless nor perfect.

Having read these three excellent exhibitions and reflected on them, put your thoughts together with what your teacher has said and then make the final changes to your exhibition. This is now the end of the commentary-writing process and the exhibition commentary you have is the version you will submit to the IB for marking.

Exemplar 1: Knowledge and the knower

Prompt 22: What role do experts play in influencing our consumption or acquisition of knowledge?

Introduction

We often associate experts with having answers or knowing the truth, especially in science. But there can be differences between how the opinions of experts are received; this is dependent on both the experts and those seeking knowledge. This exhibition will reflect on this question about when we might and might not trust experts to tell a version of the truth and on why we might or might not believe them.

Object 1: Tweet from Donald Trump denying global warming

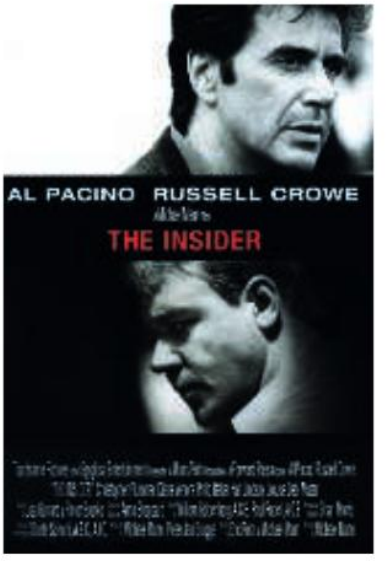
> Snowing in Texas and Lousiana, record setting freezing temperatures throughout the country and beyond. Global warming is an expensive hoax!

Although scientists and climate change experts all over the world claim that global warming is a very real and dangerous phenomenon that is occurring in the world today, there are some people in powerful positions who do not believe the phenomenon is true. Donald Trump, [former] president of the United States, is one of these people. Not only does he claim not to believe in global warming, he also shares his opinions frequently. In the tweet shown here, he brings up the point that record-breaking freezing temperatures were set across the United States, therefore contradicting the claim that the world's temperatures are rising. By tweeting these types of tweets which contain a fallacious argument (a hasty generalisation where one fact leads to an unsupported generalisation) to support his opposition to global warming, many will believe him. This tweet brings up the question of how we decide who is an expert and how they influence us. One of the main fallacies seen in politics is the argument from authority where the expert making the point is not an expert in the academic field. Therefore to believe what an expert says they need to be the "correct expert" and they should not be using logical fallacies to convince you of an argument.

Connected to this there is also the question of whether those being informed want to believe the experts or whether it is convenient to believe them. Maybe the reason behind this is that to admit there is climate change also means we need to take responsibility for it. Hence it is not only about expertise, but it is whether or not it is convenient—as Al Gore said, climate change is an inconvenient truth.

Finally, the means by which this is communicated is also important. Expert opinions as demonstrated by climate scientists are much more accurate than the information from Donald Trump, but they will probably not have the same amount of influence over public opinion because they will not have as many followers on social media or as much authority as a president. The expert becomes the expert by having the influence rather than the knowledge.

Object 2: Movie poster from the film "The Insider"



In the movie "The Insider" this time the experts are in a different sort of relationship. Here, the two experts know the truths of cigarette smoking and the harm it can cause. However, one feels the need to tell this information to the world while the other wishes to continue with what "experts" in the tobacco company have to say, which stress the benefits of smoking. This was the situation in the 1960s as portrayed in the film because one group of experts claim smoking is very problematic for the health while the others claim there are benefits and no health issues.

This is a case of knowledge being deliberately biased. As the scientists who have found information backing up the claim that smoking is bad for you work for the tobacco companies then there is a lot of pressure on them to not tell what they know. Thus results are falsified to ensure the reputation of the company. This leads to questions about the circumstances under which experts provide knowledge and one of the most relevant questions that can be asked is whenever experts produce results is who funded the research. This is not always easy to find out. A piece of knowledge may come from a relevant expert source, but if the expert can potentially gain from being on one side, then it leads to problems. In the case of the tobacco industry, the advertising was so strong and powerful that they voices of dissent were drowned out for many years. As with all science, it could be argued that the true expert opinion always prevails in the end.

Object 3: Vaccine against Ebola

Scientists and doctors working for the Merck Sharp and Dohme Corporation have developed the new Ervebo vaccine to fight against Ebola and tried to bring it into countries with the disease. While many of these countries accepted the vaccine, some groups of people were reluctant to accept the help due to their lack of trust of these expert scientists and doctors. In this case the potential reason behind this is because the experts have let you down before—Ebola is found in countries that were once colonised by western European countries. Many of these countries where Ebola hit, have been subjected to other countries or groups of people coming into their country to exploit their natural resources. This has led to a lack of trust of foreigners.

Therefore, it is not surprising that some people were reluctant to accept the vaccine even though it would have been beneficial, as there was no trust in the experts. They did not know that these foreign scientists and doctors truly wanted to help them.

This is a case of outrightly not believing the experts and is different to what I found with the first two objects. In the first case it is not believing because you believe the person with the most power, in the second you believe the more persuasive argument with the big advertisement campaign behind it, In this case you don't trust the experts because they belong to a group of people who have let you down before, even though that was in different times. This is not any form of reasoned argument, but is one where emotion plays a key role. In this case, it is the non-experts who have created a spurious counter argument that then get believed and therefore create major bias. The way this happens is to highlight a potential minor problem in one vaccine and conclude the argument must be true for a new vaccine. Instead, they rely on past experiences to determine who to trust, which in this case is not benefiting them.

Feedback

This is a strong piece of work that remains consistently focused on the prompt. The three objects each offer a viewpoint on the role of the expert and ask questions about what it means to be an expert. The idea of experts and authority figures is brought up and this is indicative of providing justification for what is being said. The role of the expert is very clearly made in each case. Now you will consider each object individually.

With object 1 there is a clear sense of who the expert is, but the questions about his expertise are raised fairly quickly. The link between the prompt and the object is clear, with plenty of explanation. This is shown in the reference to fallacies, with the student recognizing real cases of them. However, the idea of what sort of expert is being considered is an interesting conversation, with the suggestion that authority and power may influence your position as an expert, irrespective of whether it is justified. The idea of getting your message out there is another position on experts and how they influence the knowledge we gain.

Object 2 shows a very different side to expertise, again linked to the media, but very different in origin and with a quite different outcome. The idea that experts might deliberately lie to you even though they really are experts in the field is a viewpoint to consider. The fact that this is based around an event that happened around 60 years ago and there is a degree of vindication makes this a good choice of object, as at least some of the circumstances behind it are true. Again there is a strong link between object and prompt—there is a question whether this is based on what we know of the event or whether the student has explained it effectively. It also raises important questions because the funding of research remains the same today; therefore, the influence of funding on research remains as relevant today as it was back in the 1960s.

With object 3, again there is a strong link between the object and the prompt. It might have helped had the argument drawn a little more on the specific context of the manufacturer of the vaccine and the

countries where it was administered. The idea of colonial influences on science is perhaps not the most obvious, but it does show that the student is giving some careful thought to the prompt. The argument that this is an emotional rather than a reasoned decision is a good point to make. How specific this is, and how much of a general problem this is, is not addressed, which is disappointing and possibly links back to the specificity of the object.

It is worthwhile noting that this commentary has an introduction and the introduction is focused on the idea of experts giving us truth. This is not really the focus of what the student says in relation to each object.

It is suggested that the student might have written this introduction before any other part of the commentary and as the work developed different directions appeared so that by the end the introduction ended up slightly dislocated from the commentary. Given that this commentary goes slightly over the word count, the best advice for the student would be to lose the introduction as it is not adding much and, making an effort to be more concise, let the strong treatment of the objects tell the story. Overall, this is a strong exhibition with three objects that shine a spotlight precisely on the prompt. There are minor concerns about the precision of what is being said and about the role of justification and evidence in the third object, but these are not enough to affect the mark significantly.

Exemplar 2: Knowledge and language

Prompt 2: Are some types of knowledge more useful than others?

Object 1: My Merit Badge Sash

This object is my Merit Badge Sash, representing knowledge and skills taught through Scouting. A major aim of the Boy Scouts of America is to teach important, life-long knowledge and skills to young men.

Part of ranking up in scouting is earning a number of merit badges which indicate a certain level of mastery in a specific field. When we think about gaining knowledge we often think about what we learn in school and in that case pretty much all knowledge is communicated through language – this very much the idea of "knowing that."

However, I would argue that what I leant at scouts is equally important and is quite different from what I have traditionally learned at school. Most of this is connected to "knowing how". Each of these badges represents knowledge that is useful in different situations of knowing how. For example the orienteering merit badge required me to have knowledge of how to read a map and compass and to be able to calculate routes. Each can be really useful, but to suggest one is more useful than the other does not really follow. The usefulness is entirely dependent on the context – if I am lost knowing how to swim or how to interpret Shakespeare is not useful.

Not only must the Boy Scouts of America know a variety of skills they are a knowledge community in which knowledge is acquired by students who learn from older, more experienced members. A Scout must first learn information himself, and then be able to teach that knowledge to others. Scouts are able to be a part of the teaching process, thus completing a sort of cycle of learning – this is another form of knowledge which is useful. Ultimately it leads to the knowledge of how to be a successful leader.

Object 2: Logo for the Woori American Bank

Growing up in an international community as a third-culture kid, my first experience of speaking the Korean language (hangul, 한글) was in my first year of middle school, when I moved back to Korea. This is exemplified by the word "our (woo-ri, 우리)" which is used in a very different way to how it is used in English. Whenever I see the bank's logo I am reminded of this. This emphasises the idea that cultural knowledge is at the very least linked to linguistic knowledge. It could be argued that language is the way in which culture is communicated. It has real uses for me in terms of my own pesonal knowledge growing up as a third culture kid. In Korean "our (woo-ri, 우리)" is used for anything of possession. In English, we usually use "my" for things that we own or even the country we are from. In Korean we say "our country", "our family", "our company", and even "our wife". The same idea is represented through the bank logo—it is our "our bank". As such, the Korean language displays a strong sense of collectivism and community that is present in national culture. Whereas I noticed that Western languages—specifically English—seem to use individual terms more and also seem to be more influenced by more individualistic national culture.

As I have to understand both cultures to be able to sociliase effectively in both cultures this knowledge is useful to me. Being a Korean living in an international community I understand that every culture is different. Clearly all of these things are useful to know, probably most importantly on a personal level, but also as a representative of my culture to the outside world. What is more difficult to say is whether this knowledge is more useful than other forms of knowledge. Althought the knowledge is very different from what I discussed with object 1, the idea of context remains central. The relative usefulness of any of this knowledge is overall important but for any particular situation it is driven by the context of the situation.

Object 3: *The Things They Carried* by Tim O'Brien

The Things They Carried (1990) illustrates Tim O'Brien's experiences in the Vietnam War. The book portrays the lives of soldiers during and after the war. In the first chapter, Lieutenant Jimmy Cross gets through the hardships of war with the fantasy of a woman he loves, but the death of a comrade makes him feel ashamed of his distracting daydreams; he then decides that he needs to shut out his fantasies to be a good leader in war. The decision he makes shows that he must sacrifice his own needs for the good of the men he leads.

This book presents a particular view of war and society. The knowledge we gain from literature is arguably something that we cannot gainin other ways – it is a way of gaining knowledge of something that we

are unlikely to ever experience personally. The idea of war in the way it was in Vietnam is not likely to be repeated and a novel like this is one of the best ways of understanding the emotions behind it. A history book will give you the facts and some interpretations, but for a real feel of what it must have been like, this is the strength of literature. Although it is a novel and therefore not wholly factually accurate, the author was an American solider in the Vietnam War and it is heavily based on his experiences. It is useful not in terms of being accurate, but in terms of emotional and empathetic knowledge where war is depicted as futile and gruesome. The Vietnam War is something that is a deep part of American culture and hence this is also a way of gaining cultural knowledge of that time period. Once again the usefulness of the knowledge is in cooperation with other forms of knowledge and is dependent on context.

Feedback

This is a thoughtful exhibition where the objects have been carefully chosen and all link very clearly to a real-world context. There is a strong link to the prompt and a good emphasis on the idea of usefulness, which is a key concept in the prompt. All objects contribute on a balanced basis and there are no weak links. It is easy to explain a strong justification for each object to be chosen and for the actual contribution it makes. Now you will think about each object.

Using the merit badges as object 1 was well thought out as it allowed the student to talk about a range of different things that he knows how to do, and to make a claim for this kind of knowledge in terms of knowing how. This point is well made and there is a good integration of object and prompt in this, which allows the student to bring up the idea of context. A link is also made to the idea of a knowledge community and how those who are shown then become those who show, so the idea of usefulness as being able to communicate knowledge and skills is raised.

Object 2 moves the discussion into language and what we learn from different cultures. Using the idea of "our" is clever and although the object of a bank card does not figure, it is clear that the focus was meant to be on "our". A little more work on this might have helped the clarity of the argument. Bringing up the idea of third-culture kids is thoughtful (these are young people who have strong influences from at least two cultures, who are brought up in a third culture). This is important as it provides the perspective for what is said in the commentary, which is quite reflective and explains how the student is able to get some distance on the arguments. This could have been a little clearer in the commentary itself. The idea that cultural knowledge has a degree of both specificity and generalization associated with it is shown well and the link to usefulness is very clear—the link back to context at the end works well.

Object 3 raises a series of different discussions and viewpoints on the question and focuses on why it is useful to read literature. It is good to see the student then focuses this on the idea of emotion and empathy, which is a very universal ideal, rather than the more academic aspects of literature. The use of this object is a shrewd

choice as it allows the discussion to focus on very different points of view, while still providing the idea of context to tie things together.

Overall, this is a consistently good exhibition where the objects allow the student to make different points. It is also worth noting that the concept of context is a link between the objects. Although links between objects are not required, in this case this feature ties the exhibition together and increases the evidence.

Exemplar 3: Knowledge and technology

Prompt 15: What constraints are there on the pursuit of knowledge?

Object 1: Aerial photography using a kite

This object is a camera, flown by a kite in order to take aerial photographs. Prior to the airplane era, this was an important form of aerial photography used by humans to document the Earth from above in the pursuit of knowledge. It is still used notably in environment and bird monitoring or aerial archaeology (e.g. the plotting of Roman or Celtic sites).

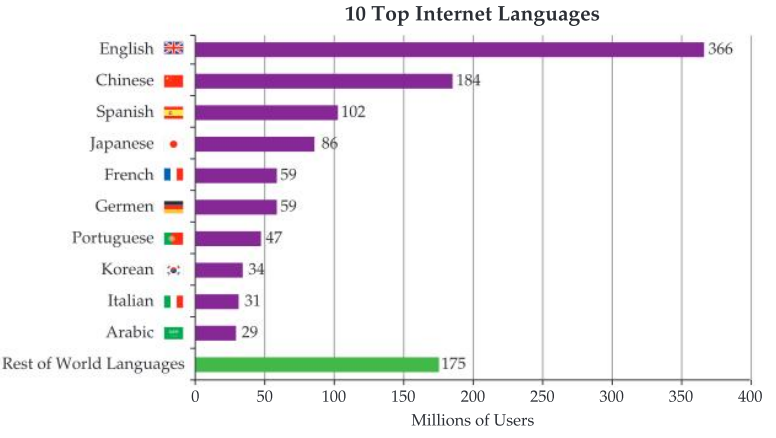
In its time it was seen as a cutting edge technology, but of course technology is only the best there is at a certain point in time. We are all used to wanting the latest phone or the latest tablet, but just like aerial kite photography once it has arrived whatever went before becomes obsolete. The reason that these items become obsolete is because what replaces them does the job they are meant to do better. For knowledge which is dependent on technology it will only be the best it is at any moment in time and therefore knowledge in that sense is constrained. This is exemplified by drones which have replaced kites as they are less at risk from unpredictable weather, have better manoeuvrability, can fly precisely at both high and low altitudes, and have the ability to image things at the centimetre level. However, accuracy is not the only requirement. In terms of viewing birds, drones are not ideal as they are clearly mechanical. Kites are silent and more natural as far as birds are concerned and hence they are less likely to be frightened by them. It is therefore important that technology fits within whatever environment it is studying and using an unsuitable device can itself be a constraint on learning new knowledge.

Object 2: Car which is used to produce images for Google street view

This object is a car which has been used to produce images for Google street view. These cars and the images they produce have been the subject of a number of complaints and investigations. When Google street view first launched there were concerns about what would be shown on the images that were collected and displayed. However, this then escalated when it was found that Google was also collecting WiFi data. The progression this sort of technology has expanded knowledge by providing new perspectives and given information that was difficult to gain without actually being physically present , yet it has also raised discussion on privacy, and whether there should be limits and constraints put on the pursuit of knowledge if it violates people's privacy.

This raises ethical questions about what we can and cannot do. We do not live in a society where we can gain knowledge at any cost and one of the "costs" we often care about deeply is an ethical cost. Hence if there is something unethical about what is being done, then the balance has to be decided on whether the price is too high and therefore we do not seek that knowledge, even if we have the technology to do so. Of course it is not as simple as deciding where the line is as different styles of ethics often suggest different lines. So one ethical code might seek to constrain knowledge whereas another ethical code may not. Equally it may also depend on who (this could be a person, an organisation or a country) is making the ethical decision and what other factors they may want to take into account. For example, Google is banned from showing US military bases. So when the people objecting have power and it is a matter of national security then the privacy concerns become more important than giving everyone else access to the knowledge, but when it is just everyday people who have concerns about privacy then this is not important enough to Google to be a constraint. The constraints on knowledge then become a potential debate about power.

Object 3: A bar chart of internet users by language published by Wikinomics



This is a bar chart which shows the first language of those who use the Internet and shows the fact that English is by far the most used language. It is worth remembering that in terms of mother tongues languages spoken at home the top three is still the top three, but in a quite a different order. The most populous language is Chinese, followed by Spanish and then by English. Now many people in the world may not have English as a first language, but may well be able to communicate in it. However, that certainly does not amount to everyone and this raises the question about who is effectively highly limited by language on what they can do on the Internet.

This is not really about using the Internet as a source of keeping in touch with friends, but is about using the internet as a way of gaining knowledge and of spreading knowledge. It is about the idea that when academics undertake research they use the internet to do this – most of my sources for my extended essay in Chemistry came from the Internet and were available only in English. It is the same idea when we look at search engines which are predominantly in English. However, it is not only about academic knowledge. If we look at the media stars on the Internet and who have the most followers, again the vast majority post in English. Without a working knowledge of English the knowledge you can gain from the Internet is constrained. This also potentially raises questions about languages where there are only a small amount of speakers. With so much available in English the desire of young people to learn English continues to grow and potentially leaves smaller languages in jeopardy. As language links to culture this then finally raises the idea that the Internet is a reason for a decline in cultural knowledge – certainly an idea which is open for debate.

Feedback

This exhibition has been put together well. All the objects link well to the prompt and explicit reference is made throughout to the idea of constraint. This is a good example of where ensuring that the exhibition stays in the boundaries of technology allows for an in-depth discussion on each object. This is a concise commentary; links to both the prompt and technology feel natural. Now you will consider each object in turn.

The first object is certainly different from the other two and makes a good contribution, as taking photographs from a kite is obsolete in some ways but not in others. It has a strong real-world context as this is an idea that most of us can relate to. The idea that constraints are not always negative constraints was a good way of adding reflection to the commentary. The idea of constraint here is on a number of different levels and the fact that it is effective in a range of ways helps with the role of evidence.

The second object makes a good contrast to the first and focuses the idea of constraint in quite a different direction. Using an ethical lens for this prompt with this theme was a good choice for this student, as there is clearly some understanding of the ethical positions. It could be argued, however, that this is where a little more could have been explicitly explained. The student then links this back to a big TOK question about the idea of knowledge we should not speak. Although a little lacking in specifics, this part worked well in terms of opening up interesting questions.

Object 3 initially looks a little similar to object 2, but in the end makes a good contrast to it, with the focus being on the interaction of language and technology. Use of the internet and language on the internet are relevant to everyone, but often have a significant place for IB students, given the philosophy of the programme. This object shows some good TOK thinking in again relating to the bigger picture.

By the end, the fact that this commentary makes the reader think about the objects within the prompt and then shows some detail of the bigger picture is good justification for the objects being included. This commentary ties together well and says what it needs to say within the word count.

FINAL CHECKLIST

Once you have reflected on the three exhibition commentaries in light of what you know about TOK, and thought about your teacher's comments, you should make any final changes to your work. Once that is done you are on the last stage of finishing your exhibition commentary. To help you with this, use the following checklist to check that everything is in order.

- **Have you read every piece of advice from your teacher on your exhibition commentary and acted on it?** Make sure you read the feedback carefully and seek clarification for anything you do not understand. If the feedback suggests that a part of the commentary needs extra work or more major work, then go back to the relevant section of this book to see what else you can change.
- **If you put in an introduction at the start, check that it still fits and is still necessary.** Students often spend time at the beginning crafting an introduction, which then sets up their thinking for the whole commentary. However, as various changes are made, it is easy to forget about the introduction and it can become dislocated from the rest of the commentary. Remember that for this task an introduction is not required—so if you do include one it needs to be very short and you need to make sure that it is contributing in some meaningful way. During the final read you need to check that the introduction definitely adds something and that it fits with the rest of your commentary.
- **Is your commentary fewer than 950 words?** Remember that your examiner is not required to read over the 950 word limit. Make sure your commentary has not gone over 950 words (excluding bibliography and diagrams). If it has you will need to do a little more fine-tuning and bring it down to fewer than 950 words.
- **Do all ideas in your exhibition and all the images taken from other sources have a reference?** Check your referencing carefully. The use of direct quotes is likely to be less common in this task than in other tasks, but it is possible that some or all of your images of objects will need a source. As always, if you are in doubt then reference it.
- **Do a final spelling and grammar check.** Through the last stages of working on the commentary as you fine-tune, it is easy to introduce small errors. Although these will not affect your final mark it is always a good idea to produce the most accurate work possible. Make sure you do a final check.
- **Check your commentary's presentation.** Ensure that your commentary is double-spaced, in font size 12 and in an easily readable font. Always be kind to the examiner's eyesight!

CONCLUSION

The first part of the exhibition is now complete. You will hand in the exhibition commentary to your teacher and they will mark it and ensure that the IB can undertake the moderation process. However, the exhibition itself still has to happen. How you can prepare for the exhibition effectively, then how it happens, is the focus of the final chapter.

9 THE EXHIBITION

In this chapter you will:

- ✔ gain an understanding of the possible range of exhibition events
- ✔ think about how you will prepare for the exhibition
- ✔ consider how you might work on an exemplar exhibition
- ✔ reflect on the TOK course and how it might help you to move forward to university, college or the world of work.

INTRODUCTION

Now that you have completed the exhibition commentary, the final part of the exhibition task is the opportunity to showcase your completed exhibition to an audience. The precise format of the event is likely to be determined by your school, but this chapter focuses on how you will prepare yourself for the event. You will think about how you might exhibit your objects and how you might talk about them. You will finish with an overall reflection on what you have gained from the TOK course and how it might help as you move forward in life, for example to university, college or the world of work.

This is a fun part of the course. It is a part where there is no pressure of an external assessment, but you get to demonstrate what you can do and what you know to an audience.

THE EXHIBITION FORMAT

It is likely that your teacher or your school will make the final decision on what your exhibition looks like, but it is very possible that you and your classmates will have some input. The only requirement from the IB is that some form of exhibition takes place, but beyond that it is down to your school to decide. The most important thing to remember is that you need to see this as an opportunity for your completed exhibition to be showcased and exhibited to an audience—it is a chance to show what you know and have learned in TOK. There are two aspects to this and each will be considered separately. Firstly, consideration will be given to what you will be required to do and secondly to the scale and location of the event.

What you are required to do

Two main points are considered here but your school will decide exactly what type of exhibition takes place. It is possible that you will be asked to put together a formal exhibition or a formal presentation, or a combination of both. It is also possible that your school will decide that something completely informal is appropriate.

A formal exhibition

A formal exhibition is similar to an art exhibition. The exhibition's objects and the commentary are displayed for others to see. It is likely that you will be with your exhibition for some of the time, with the possibility that some people may ask you questions about it. Here the important thing is how you put the objects and the commentary together. In the commentary, no consideration was given to how the objects were going to be displayed and whether the way they would be displayed in itself provided a viewpoint or perspective. Now that you are exhibiting there is the possibility of including these elements. It also raises the question of what you do with the commentary. It could be split so that each object has its own commentary, or you can keep the commentary as a whole and possibly think of the exhibition itself in a more unified form.

A formal presentation or speech

If you are making a formal presentation or speech it is likely that your objects and the commentary will be with you, but they may not be set up in any sort of formal setting. The focus here might be on you presenting and what you are saying. It is likely that what you say will be based around your commentary, but some differences will be needed if your presentation is to be wholly successful. Remember that the language you use to write and the language you use to speak are not identical. The size of your group and where the event takes place will determine the length of the presentation, but it is likely to be somewhere between three and ten minutes. Preparation will be necessary for your presentation to be effective. As the focus of the TOK exhibition is the objects, it is likely that you will have your physical exhibition within arms' reach and therefore the objects themselves are likely to be your manipulatives, not a set of slides created with presentation software.

The scale and the location

Each of the above is possible in a variety of locations and on a variety of scales. It is not really possible to comment on precise numbers as it is dictated by the size of your school and/or your community. However, a number of different locations are possible and this is the focus in this section. Here are some scenarios from different students.

Ali: "Ours is going to be an event in our classroom with just our class of 20 students and our teacher. We can arrange our objects as we want, but we each have to give a three-minute speech on our exhibition. Afterwards we are going to share some snacks and drinks to celebrate and if anybody wants to ask further questions they can."

Ida: "We have decided that we are going to hold our exhibition as a whole year group. In our year there are four TOK classes and four teachers. The exhibition will take place in the library and every student has been given a space to set up their exhibition. We have been given two hours on the day before to do this and it is up to us how we put up our exhibition. During the exhibition itself we do not have to formally present, but we have been split into groups, A and B. During the first half, group A will look around the exhibitions of group B and then we will switch. As people walk around they will be able to ask questions."

Anthony: "We have been told that our exhibition will be formal and that our whole year group will be together—it has been on the school calendar since the beginning of the year. It is going to take place immediately after school in what we call our community space where the art exhibition and parent/teacher conferences take place. Students from younger years, all teachers and the school administration have been invited so we have been told to think carefully about how we explain because our audience does not necessarily have the same understanding of TOK that we do. Our teachers have recommended that we revisit our commentaries so that we are clear about what we are going to talk about if asked. We have also been told to give some thought to what our exhibition will look like and we each have our own space in the room."

Dahlia: "Earlier in the year our teacher said there was discussion about having a big TOK event after our exhibition and asked how we felt about this. Most of our year group felt really excited about this, said that we would be up for this and that we would be prepared to do some preparation when the time came. It was then put in the school calendar. The event involves the whole school community including parents and a number of prospective students who will be starting at the school next academic year—in fact anyone who is interested can attend. As the event is happening at a time of year when the weather is good and not wet, we are holding it outside. The school is on a large campus with lots of trees so there are lots of possibilities. We each have our own space and have been told to make our exhibition look exciting and interesting and we have been given homework to explain how we are going to give our explanations. The format is that people will start to arrive early evening and be offered a welcome drink. Then there will be a formal opening where a few of us will speak, explaining about TOK and the role and purpose of the exhibition. After that the exhibition will open and people will walk around and talk to us. As people are walking around, party food will be served. As it is among the trees, that part of the campus will be specially lit."

Myriam: "Ours is going to be an online event. It has been strongly suggested that we make a video of our exhibition, but if we prefer then we can produce a podcast. In our video/podcast we are required to show or describe our exhibition and then provide some form of spoken commentary. It has been suggested that we base this on our written commentary but that it is adapted to make it more interesting to listen to. If we want we have been given the possibility that we can contribute to other people's videos. However, we have also been told the video/podcast must not be longer than ten minutes. Our videos are them being posted to an online gallery where we will have access to all of them and we will be required to watch a specific number of them to successfully finish the course."

YOUR PREPARATION

Although the preparation might look quite daunting, in reality it is fairly simple. In one sense you do not need to worry about the scale of the event as preparing a presentation, exhibition or speech does not change dramatically whether you are presenting to 5 people, 50 or 500. If you are exhibiting and/or presenting informally, then as long as you have a good understanding of your exhibition that should be enough. The focus in this section will be on putting together a formal exhibition, putting together a formal speech or presentation and an awareness of who the audience is likely to be.

A formal exhibition

This is something different from the work you have done for the assessed part of the exhibition, as the focus here is very much on how the objects are shown to the audience. If you decide to take this route, obviously a lot will depend on whether you have physical objects or photographs of objects, but in either case or a mix, the ideas below are relevant.

You could think about how your exhibition objects will look to the audience. Here you will think about the visual appeal of your exhibition and ensuring that important parts of the objects are not obscured.

In Figure 9.1 the student has equally spaced the objects and ensured that they are at the same height by using stands—emphasizing the equal role they play. Also the objects in Figure 9.1 seem rather generic and this is a reminder that sometimes the specificity comes from the work in the commentary. Alternatively, for your exhibition you could opt for something a bit more interactive, as shown in Figure 9.2.

▲ Figure 9.1

▲ Figure 9.2

In Figure 9.2 there is clearly some link between the objects. This link may or may not have been part of the original commentary but would need to be explained as part of the exhibition. Again, the specificity of the objects would need to have been explained in the commentary. The order in which the objects are exhibited may also be important.

▲ Figure 9.3

▲ Figure 9.3a

▲ Figure 9.3b

In the case of Figure 9.3, the student has thought about the fact that the objects appear in front of each other, possibly emphasizing a specific relationship between them. If you are using photographs in your exhibition and your objects are different sizes, you might need a photograph of the three together to emphasize the relationship, then individual photographs of the smaller objects (as in Figures 9.3a and 9.3b). Remember that this is not an issue in the commentary, which will only show photographs of the objects separately.

The student has thought about the use of aesthetics in Figure 9.4 by having the orchid reaching over the two books.

▲ Figure 9.4

▲ Figure 9.5

Sometimes the objects have interest value in their own right. However, it is ultimately the commentary which will explain the object-prompt link.An example is shown in Figure 9.5.

▲ Figure 9.6

It is possible to include extracts from the commentary in the exhibition. This is shown in Figure 9.6, which is an example of an informal exhibition with the commentary made into a poster and the three objects placed in front of it.

A formal presentation or speech

This is not something that you will have thought much about in the earlier parts of preparing for your exhibition. The first thing to consider is the relationship between your presentation or speech and your commentary. Are you making a presentation or speech as an addition to the commentary or in place of it? This dictates to some degree whether you can reuse some of the ideas. Then there is the question of the purpose of your presentation or speech. If it is effectively an oral presentation of the commentary then it is a matter of deciding what you want to share and in what order. If it is more than this, then it depends on what is added. A few ideas would include your motivation for choosing these objects, how the exhibition fits into TOK, or even much more general ideas about what TOK is and how it fits within the Diploma Programme curriculum. This could be presented at the start and tackled by one student or it could be tackled by a group, with different people adding different things. This is one reason why planning is important. Irrespective of this, if there are members of the audience who are not familiar with TOK you need to consider the way you explain things. You could go back to Chapter 1, where you were introduced to a whole series of terms that are used in the course. This would give you an awareness of any terms you are going to include that you will need to check that your audience knows, and ones that may need to be explained. These would include, for example, TOK concepts, areas of knowledge, the knowledge framework and anything to do with TOK assessment.

The art of successful presentation and speech making is beyond the scope of this book, but here are a few reminders.

- Speak slowly and clearly.
- If you are reading a prepared script then read with animation—be excited about telling people about what you have been doing and remember this is your opportunity to showcase your work. Your voice will modulate. Do not make the mistake of continually raising the pitch of your voice for emphasis—you can go down as well as up. If you continually go up the scale, by the end you could sound like a hysterical cartoon character!
- Think about body movements. Moving your hands and arms too much can be distracting; do not move too much from side to side; think about the angle of your head.
- If you are speaking from behind a podium or lectern, do not use it as a place to hide.
- If you are not using a prepared script then think about having prompt cards to remind you of the main points and their order.
- Practise before the event—on your own and in front of friends.
- If you are aiming to speak for a set time, make sure your practice time is a little longer than the required time—people tend to speak slightly faster when presenting formally.
- You can use audience participation but ensure that you have a plan B. Audiences do not always react as expected. Smile and engage in eye contact with the audience, but try to avoid engagement with your best friends as the danger is that you will communicate something that has meaning for a small group of people but not the whole audience.
- If you include an element of story in your presentation or speech, your audience will appreciate it.
- Try not to be nervous. That may not be wholly straightforward, but remember that the audience wants you to do well and the purpose of the presentation or speech is to celebrate the end of the exhibition process.

Think about who will be in your audience. Be aware that how you say what you say will be different for different audiences. Here are some points to consider for different audiences.

- Diploma Programme students and/or Diploma Programme teachers—in this case you can assume the audience will have a similar understanding to you. If any of your objects are quite personal then what you say may need a degree of specificity.
- Teachers who do not teach the programme and adult members of the school community—for this audience you will need to explain some of the background to TOK and to the exhibition task, but try to avoid repeating what you say about your exhibition.
- Students younger than you—not only will you need to explain more, but you will have to use a simpler range of vocabulary to ensure that they understand the points you make.

In each case you will know if you have got it right from the audience's reaction.

EXEMPLAR EXHIBITION

You will now consider how this might work with an exemplar exhibition from a student. Note that you will see minor errors in grammar, punctuation and spelling in this student's writing.

Objects and commentary

The exhibition is based on the following theme and prompt.

Theme: Knowledge and the knower
Prompt 20: What is the relationship between personal experience and knowledge?

Introduction: When we consider the role of the individual knower in trying to make knowledge, there is often a tension between what the individual knows from direct personal experience and what he or she might be exposed to second-hand from sources of authority, as through newspaper reports, report from parents or other figures of authority, or in school lessons. However, I question whether this distinction is really as precise as it sounds.

Object 1: A Bible

The Bible, as a symbol of the doctrine of the organised Christian church, represents a tension between my personal experience of how people who call themselves religious Christians behave in society and how they are supposed to behave, in accordance with strictures from the Holy book. Now I have to be careful here as the Holy book has been through many rewritings, translations and editings and therefore there are questions about the certainty of what is said and linked to this the idea of interpretation. Hence the knowledge in this case is not that I believe they need to follow every letter of what is written in the Bible. However, the bigger picture ideas I genuinely think are "words from God"; they should be followed and do count as knowledge. For example, Christianity espouses many formal claims about how Christians are to behave—one of the most generally accepted is: "Do unto others as you would have them do unto you." My personal experience with people calling themselves Christian, however, includes many instances of people mistreating others, lying, cheating, and otherwise violating many of the supposed principles of Christianity. For me this goes against the big picture, the idea of trying to live a good life, and it is these big picture ideas that really constitute knowledge within organised religion. The Bible, then, represents the tension I have experienced in trying to know what Christians are like and how I should behave, because it represents the direct contradiction between formal dogma and daily behaviour. It also brings up questions about the role of organised religion and the extent to which this is knowledge. I have my faith in God which is my personal experience, I have knowledge that God wants us to live a good life, but how I get from one to the other is where I have doubt.

Object 2: A trophy my bother won in a triathlon

The trophy is evidence of the pleasure that my brother gets from extensive and intensive physical activity. My personal experience with running (and other forms of intensive physical exercise) has never been positive. I have many times been told that people get an endorphin rush from exercise and that's why so many people enjoy it, but I have never experienced that myself, even during periods of my life in which I have exercised regularly. My personal experience dramatically contradicts what I am told, and what I can observe from watching my brother, who likes exercise enough to actually participate in triathlon. The trophy is concrete evidence that my experience is not universal (although it is perhaps indicative of the other extreme!). Of course, the knowledge of running is not absolute. As I said earlier I have been told that this is true in many cases and therefore I may not be one of the many. Although it may be backed up by evidence from the natural sciences, this is not a law of science – when applied it may be non-scientific reasons that stop my enjoyment. In one sense the knowledge here is about knowing how and it could be argued that the personal experience becomes the knowledge itself. This type of knowledge is difficult to explain and transmit to others. In one sense, my brother and I have very different personal experience, where both cannot lead to the same scientific knowledge. All of knowing how is not necessarily scientific and it depends on the precise aspect under discussion.

Object 3: A butterfly net

The butterfly net represents my personal experience with entomology, which is in some ways in dramatic contrast with my father's experience with entomology. My father is a professional biologist, and his learning about insects has included a whole lifetime of devoted study, including field work as well as work in museums as well as reading journals and other professional publications. My experience consists of one introductory course in entomology when I was doing work experience at university and a number of years' experience running an annual butterfly census for the North American Butterfly Association. The butterfly net is a tool used both by my father and by me; however, the difference in our ability to use it to effect is dramatic. The butterfly net therefore is about the tools used to gain knowledge and to gain personal experience. You could argue that in this case as in many situations they are the same, just at a different level. Some would argue it is the formality with which you learn the knowledge that matters so the net represents personal experience of dabbling (which is what I have done) as opposed to dedicated effort over many years including enduring some hardship (what my father has done). However, there is an argument that personal experience is just an aspect of knowledge. Personal experience is an informal type of knowledge which is often used before becoming an expert and sends a message of intent. Therefore the distinction between the two positions represents the difference in my ability to learn entomology and my father's, but these are completely opposite; the distinction between personal experience and knowledge is dependent on context.

THINKING POINT

If this were your exhibition how would you go about exhibiting it? What would you say in any speech or presentation that was required?

Discussion

Here are a few thoughts on the thinking point, based on the objects and commentary for the exemplar exhibition.

The objects

For this exhibition it would be very easy for you to bring in the actual objects. In this situation it would be a matter of thinking about how they might fit together. As the butterfly net is so much bigger than the other two objects, you might need to be careful that it does not dominate the exhibition. As can be seen from the commentary, it represents one of three separate points of view and there is no indication it is the most important. It might be worth using stands for the other two objects to give them some height, or you could have the butterfly net lying down rather than standing up, to signify that each object makes an independent contribution. An interaction between the objects would be possible, although it does not appear to have been an original intention. An obvious piece of imagery could be provided by having the bible and the trophy caught in the net. This could represent the idea that all personal experiences are interlinked and there is no particular order. The handle of the net could be placed between the pages of the bible, suggesting that personal experiences cannot be made wholly distinct. The trophy and the bible could be on a desk and the net could become a prop that is used while the speech is given. Hence the net could be used physically to catch things that are personal and this could once again be used to link personal experiences.

The commentary could be split, with each part with its object, or it could be kept as a whole. This might depend on what is decided on the arrangement of the objects.

A speech or presentation

The prompt here is one where the terms have a certain meaning and if you were presenting to a younger audience or people with little or no knowledge of TOK, you would need to provide some explanation of the title. This would include some form of basic definition of knowledge in order that the audience knows that there is some distinction from personal experience. The prompt asks about "the relationship between personal experience and knowledge" and in any speech it might be a good idea to address the concept directly.

This commentary is of good quality as the student does manage to define clearly the role for each object and its real-world context. This is an example where the student has chosen objects in order to represent different perspectives and the work required to answer the question has been done.

However, it is suggested that the student does not quite focus on the idea of the relationship in the commentary: the idea is there, but it is more implicit than explicit. With the bible, the relationship is that on a basic level the writer's personal experience of those who claim to be Christian does not always fit with what knowledge the main Holy Book of Christianity, the bible, presents. In the case of the brother's triathlon trophy, the relationship is that the two people's personal experiences of exercising differ massively, yet the knowledge from science suggests that only one view is correct. In the case of the butterfly net, the relationship is that when the writer uses it this is connected to personal experience, but when the father uses it this is connected to knowledge.

In a speech or presentation it would be important to establish a degree of clarity similar to the lines above and then to discuss the role played by each object. More generally, if some form of interaction has been suggested in the exhibition itself, then that might dictate the order in which the objects are presented. Or the order could be decided by how you can make the most effective links in the speech. For example, you could start with the net as this is where there is a clear distinction between personal experience and knowledge. This could be followed with the bible, where the link between personal experience and knowledge is much less distinct—what is knowledge to some is personal experience to others. The trophy would then be the last item as personal experience does not necessarily lead to knowledge in all cases. By starting with the net you set up a structure with two distinct sides, which can then provide the format for discussing the other two objects. Alternatively, the order could be bible, trophy, net. With this order you could set out some of difficulties in the relationship between personal experience and knowledge first, and then bring them together using the example of the net.

ON THE DAY

You should now be in a position to exhibit. Remember that this should be an enjoyable experience for you and it is a chance for you to showcase the work you have done. This is the reason why you have put thought into what the event will look like and made sure you are well prepared. Below is a set of images taken from three different exhibitions to give you an idea of what event might look like.

TOK AND YOUR FUTURE

You have now worked your way through this book and it is possible that you will have finished your experiences of TOK in school. If so, hopefully you have enjoyed the course and enjoyed exercising your powers of thinking. To finish you should remember that TOK is a journey and once you complete TOK in school this does not mean the end of your TOK journey. This style of thinking will carry on through your life, whether that is in college, university or the world of work.

Here are a few things to remember. You should now have an ability to answer questions thoughtfully. Although the two TOK assessment tasks are very different, they both require a thoughtful response to a question. Forming a thoughtful response is a skill you should be able to take forward. It is a skill that is useful whenever you are working with academic knowledge and a skill that is needed in the workplace. It is a skill on which you focused in TOK and, hopefully, you improved through the two-year programme. However, that does not mean you are now the best you will ever be—it is a skill you will continue to learn in different contexts.

Closely connected to this, you have implicitly learned what sort of question to ask and when. You considered the question: "What

makes a good question?" In response, you could suggest the answer is contestable, but suggest that it starts with being aware of what sort of answer is wanted. If a definitive answer is wanted then a closed question needs to be asked. If a list of qualities of a specific concept is required then the idea of "what", "when" and "where" questions becomes important. If analysis and exploration are needed, then "how" and "why" questions are an essential part of gaining understanding. All of these can be "good" questions, but what is meant by "good" is the idea of being conscious of what the question needs to do and what it will do. Ultimately, if you ask the wrong questions, by definition you will get the wrong answers.

At this point it is worth briefly thinking about the learner profile. Earlier it was said that TOK is a journey—and the learner profile is also a journey. In terms of the qualities listed in the learner profile, the idea is that all sorts of different aspects of the Diploma Programme will have helped to build and develop those qualities in you. However, it could be argued that no other subject does as much to address all of the qualities. Just reflect on the following.

- Knowledgeable—think about the range of different forms of knowledge that have been under discussion.
- Balanced—this is the idea that you have looked at a range of topics for broadly similar amounts of time.
- Communicators—you have learned to express yourself through group work, discussions, interactions and through the final assessment tasks.
- Thinkers—thinking is central to the TOK course, without it no progress would be possible.
- Principled—remember that ethics was one of four aspects of the knowledge framework and you have asked questions about both the knowledge itself and how it should be used.
- Open-minded—you have been exposed to examples from a very wide range of sources and cultures. Some you would have known about, some you came to know about and others you might have found challenging to engage with. You might now have a different view of some of the areas of knowledge or the themes.
- Caring—this is the idea that you addressed your ideas while being respectful of the views of others; TOK potentially tackles some challenging areas for discussion.
- Risk-taker—you were prepared to think about and listen to the views of others and you were prepared to give your opinion even though you knew others may not agree.
- Reflective—remember the number of times you were required to contemplate what was being said or when something was said, or you read something, that made you stop and think.
- Inquirer—think about when something was said and you wanted to know more and you wanted to know why or why not.

Students often think of the learner profile as the qualities needed to be a successful student. In one sense this is true, but on entering the Diploma Programme there is no student who cannot improve further in some way. The same is true of all Diploma Programme graduates and will remain true. This one is a never-ending journey, but it is a fun and pleasurable one and one in which TOK helped you on your way.

Within the course there has been a focus on really understanding perspectives—this is listed as a concept and it is an aspect of the knowledge framework. It involves the idea that most knowledge in the world is not seen in one particular way. Sometimes what is seen as right from one perspective may not be right from another, and you have had to think about this and sometimes question where you stand. You know that at certain times this is going to lead to potentially difficult conversations. You have also understood that although everyone is allowed an opinion or perspective on something, these do not necessarily all count equally.

In the TOK course you have learned how to reflect in various ways.

- Given the nature of the subject, the emphasis in TOK is on critical reflection, which is characterized by reflecting on metacognition, evaluation, justification, arguments, claims and counterclaims, underlying assumptions and different perspectives.
- There is also a role for affective reflection, which is characterized by reflecting on attitudes, feelings, values, principles, motivation, emotions and self-development.
- In addition, there is a role for process reflection, which is characterized by reflecting on conceptual understandings, decision-making, engagement with data, time management, methodology, successes and challenges, and appropriate sources.

As students you have become aware of this and should try to build reflection into your studying.

Finally, think about the idea of the transference of knowledge. One of the things you will have had to do in TOK is to take an idea and either reapply or rework it in a different context. You might have taken an idea from your science class and used it as an example in TOK, or you might have taken an idea from TOK and applied it in your geography class. This is not an easy skill to attain successfully as the links are not always clear. However, both your essay and your exhibition asked you take things from other parts of your life and look at them through a TOK lens. This is a skill you will find particularly useful in any future academic studies.

To finish, I would like to propose that what is necessarily taught in TOK is what could be called "grey thinking". This is the idea that you can look from multiple perspectives and consider multiple answers but recognize that some are better than others and that few, within a real-world context, are "absolute". At the age of 16, which is the age at which many students begin TOK, your experience of education has often been one of concrete facts and of teachers as authority figures of knowledge. This provides a degree of stability at a time in life when many students are questioning a whole variety of aspects of themselves. TOK is the journey where you see that knowledge can be equally unpredictable and therefore something you need to navigate. This suggests that not only is the TOK classroom a thinking classroom, but it is also a caring classroom. Ultimately, TOK starts students on a journey from being "black-and-white thinkers" to being "grey thinkers". TOK is not a spectator sport, it is what has been lived. Very simply, this course was a two-year introduction to the rest of your life. Hopefully it will serve you well.

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