

THEORY OF KNOWLEDGE

In order to secure success for their candidates, schools are strongly recommended to ensure that this report is read in detail by all TOK teachers, and the Diploma Programme Coordinator.

Overall grade boundaries

Boundaries for this session were set as below:

Grade:	E	D	C	B	A
Mark range:	0 - 3	4 - 9	10 - 15	16 - 21	22 - 30

Statistical Summary

	May 2015	May 2016	% change
English	63,905	67,477	+5.59%
French	583	655	+12.35%
Spanish	4,660	6,021	+29.21%
Chinese	515	540	+4.85%
German	66	96	+45.45%
Total candidates	69,729	74,759	+7.21%

Section 1: The essay

Component grade boundaries

Essay grade boundaries for this session were set during the grade award meeting after extensive reading and discussion of scripts, as follows:

Grade:	E	D	C	B	A
Mark range:	0-1	2-3	4-5	6-7	8-10

These boundaries remained unchanged from those applied in the M15 and N15 sessions.

Examiners

Thanks are extended to 224 examiners who assessed TOK essays this session. The comments in a document such as this tend to focus on weaknesses of assessed work, but there are many rewards associated with the opportunity to appraise TOK work from around the world. Teachers who wish to become examiners can visit <http://www.ibo.org/informationfor/examiners/> for more information (note that teachers must have two years' experience of teaching TOK before examining). It is often the case that teachers find examining helpful both in terms of their own understanding of the course and for the insight afforded with respect to the strengths and weaknesses of their own candidates.

General comments

Despite some outstanding responses to the prescribed titles, the impression offered by several senior examiners that there were fewer really excellent essays and more very poor essays compared to previous sessions was borne out in the end by the statistics. As always, it is hard to separate out key causes for fluctuations in quality because variables cannot be isolated, and in any case there are almost certainly multiple factors involved.

Previous subject reports have focussed on a relatively fixed set of aspects connected to essay writing in TOK, and the reader is referred to these reports for a wider range of recurring weaknesses that need attention. The emphasis in this report will be on a smaller number of practices that are in particularly urgent need of attention and review by schools and teachers preparing candidates for assessment in TOK. Five of these have been identified in the following sub-section.

However, it is first of all worth reiterating that many candidates seem to be unfamiliar with features that are new in the current subject guide, such as the map metaphor for knowledge and the knowledge framework, which would be helpful in analysing knowledge questions underlying the prescribed titles. Also candidates should make sure that discussion is presented with a certain level of abstraction using the key concepts of TOK in order that it may be generalised sufficiently to answer the prescribed titles.

Sadly it must also be noted once again that there are grave concerns about the quality of essays submitted in Spanish in which alternative perspectives are presented as hard

oppositions, examples are largely drawn from the realm of cliché, and unsupported opinions masquerade as analysis. Superficiality was manifest in the treatment of areas of knowledge such as the arts (reduced to matters of individual taste), history (interpreted as anything from the past), indigenous knowledge (possessed by “less advanced” people), ethics (dominated by relativism), and religion (restricted to Christianity or Catholicism). Central to this raft of weaknesses seems to be a lamentable lack of teacher guidance.

Some factors affecting the quality of essay work

- 1) The implications of the lack of compulsory content in the course
- 2) Misunderstandings about the role of knowledge questions
- 3) Engagement with ways of knowing
- 4) The distinction between learning of knowledge and production of knowledge
- 5) The origins and choice of factual content in essays

Optionality in the course

In this edition of the TOK course, teachers and candidates are advised to study six areas of knowledge (see TOK subject guide, pages 8 and 28). In addition, there is a suggestion that four ways of knowing should be given particular attention (see TOK subject guide, pages 8 and 23). As the numbers of areas and ways presented in the subject guide exceeds these figures, there is freedom of choice as to which parts of the course can be studied. The subject guide provides for these choices in the interests of flexibility with regard to the local circumstances of schools and the interests and preferences of teachers and candidates. Fairness of assessment within this structure dictates that prescribed titles cannot specify parts of the course, and so one of the first hurdles encountered by candidates is to make decisions as to which of them should form the bulk of the essay content.

The TOK essay is comparative in nature, and indeed many recent prescribed titles indicate explicitly that two areas of knowledge should be included in a response. It is important to be able to draw contrasts between the areas that are selected, and evidence suggests that the capacity to do this is uppermost in candidates’ minds when they make these decisions. This is as it should be, but a sophisticated analysis is also dependent upon finding points of similarity across the spectrum of knowledge, and this should be borne in mind as choices of areas are deliberated and made. The teacher’s role in providing guidance to candidates should include some discussion on this matter as the decisions settled upon will have a strong bearing upon the eventual quality of the essay.

Key Points

- The generic nature of current prescribed titles means that great care must be invested in the choice of parts of the course to be examined
- While it is advisable to select areas of knowledge that show distinct contrasts, comparisons that allow points of similarity are also crucial to the balance and sophistication of the response

Misunderstandings about knowledge questions

It is clear that many candidates (and some of their teachers) have a poor understanding of what is required when attempting to respond to a prescribed essay title. The following is presented as an attempt to clarify the intentions of the TOK essay task with as much transparency as possible.

A prescribed title invites the candidate to think and write something about the nature of knowledge. But should not be just anything that the candidate would like to share. **First of all, it is vital to identify the key terms in the title as they will be the anchor points around which the eventual essay must gravitate.**

Then, attention must be paid to the form of the title. It may be phrased in the form of a question, or as a claim to be evaluated. In both cases, the task is to respond to the title exactly as it has been presented. Under no circumstances should the candidate corrupt the task by immediately presenting a knowledge question ("my knowledge question is...") and proceeding to respond to that. The essay task is not about "finding" a central knowledge question; that is the central demand of the TOK presentation task, not the TOK essay.

If the title is couched as a question, it will already be a knowledge question, so there is no point in trying to alter or replace it as the focus of the response. This can only have a negative impact on the quality of the work. Just concentrate on answering the question exactly as set. If the title is couched as a claim rather than as a question, again just concentrate on how to respond to it and resist the urge to re-formulate it immediately as a question. In both cases, the outline **(exploration) of an effective response should be the dedicated aim.**

The quality of the response can then be improved by identifying the questions to which each segment (or paragraph) is attempting to answer. These are the knowledge questions that act as markers in the development of the argument and pave the way from title to conclusion. This process will tighten the analysis, and it will also make the essay easier to read and more convincing. These knowledge questions are stepping stones from the title to the conclusions drawn from it by the end of the essay – they are NOT "alternatives" to the title; rather there should be a sense that answers are needed for them in order to answer the title.

It is possible that the numerous knowledge questions presented in subject reports over the past few years have contributed to this calamitous misunderstanding that candidates should "find" their own knowledge question right at the start (even though the reports themselves never suggest that this is what the candidate should do), or indeed fill their essays with knowledge questions and then mostly ignore them thereafter. The prominent inclusion in recent subject reports of specific knowledge questions related to each prescribed title has been with the intention of promoting an understanding of what they look like. However, this edition breaks with that tradition on the premise that they might be counterproductive in this context in establishing a correct understanding of their role. However, suitable knowledge questions that might arise in the treatment of the prescribed titles can still be found in the examiner preparation notes also published on the OCC.

Some schools are still referring to knowledge questions as knowledge issues. Once again, stakeholders in TOK are urged to keep up with the developments in the course as described definitively in the current subject guide.

Key Points

- While there is a great deal of choice available to the candidate in terms of alternative titles and parts of the TOK course that can legitimately be explored within the one title that is chosen, the exact wording of the title must be respected and examined very carefully
- If knowledge questions are stated explicitly, great care must be taken to ensure that they do not overshadow or come to replace the title itself
- Writing “my knowledge question is...” near the start of the essay is usually a recipe for disaster as it means that, in effect, the title has been displaced
- There is no need to state knowledge questions explicitly; they will shine through in a well-constructed essay focused on the prescribed title
- Possible knowledge questions have been excluded from this report, but they can be found in the corresponding set of examiner preparation notes for this session

The role of ways of knowing

At the last course revision, the number of ways of knowing included in the subject guide was increased from four to eight. The rationale for this change was not to boost the relative contribution of ways of knowing to the course but rather to emphasize that the set of attributes available to the quest for knowledge is more complex and interactive than was previously suggested by the more restricted suite of four (see TOK subject guide, pages 8 and 27). In the spirit of this change, teachers and candidates are strongly encouraged to be very circumspect about treating ways of knowing in isolation. Unfortunately, it seems that many schools still take precisely this approach to TOK, with an extended tour of ways of knowing before addressing other aspects of the course. A consequence is that a selection of ways of knowing is often “laid on the table” at the start of essays in a way that does not prefigure sound analysis. While most titles do require a clear statement of areas of knowledge to be addressed, there is no corresponding expectation for ways of knowing (except perhaps for the minority of titles which take ways of knowing as the main focus).

Because of the way the course is presented, and because of seemingly widespread practice of affording ways of knowing a privileged position in course structure, there is a strong tendency for candidates to treat ways of knowing as the primary elements of TOK analysis. This leads to a number of serious issues. Firstly, candidates tend to invoke them as “answers” rather than starting points for analysis, as if naming them were enough. The precise nature of emotion or imagination, for example, is often not considered worthy of attention. Many candidates write about how ways of knowing are “used” as if they were buttons on a console which can be pressed in combination in order to generate various forms of knowledge. This is simplistic at best, and highly misleading. A deep understanding of the role of ways of knowing leads to the insight that just because a particular way of knowing is used to justify a claim does not guarantee that it is knowledge. It is how ways of knowing are used that supports knowledge claims.

Secondly, the effort to make ways of knowing fit with what is understood about various areas of knowledge produces some spurious connections and rather artificial constructs – we learn, for example, from many essays that history is somehow an outgrowth of memory, thus neatly

what do they want here then?

sidestepping the actual role of the historian. Ways of knowing tend to be forced into the analysis in places where they do not and cannot enlighten. Sometimes they are mentioned seemingly just for the sake of making sure they are in the essay even though they provide no insight at all – “it was observed by sense perception”, “using memory, this is all I know”, “with the help of reason I reached this conclusion”, etc.

The most recent subject guide gave pride of place to a set of knowledge frameworks that were designed to provide appropriate tools for TOK analysis (see TOK subject guide, page 28 onwards). While ways of knowing are mentioned within these frameworks (particularly in connection with methodologies), the promotion of the frameworks was a response to some of the problems described above that stem from the limitations in the competence of ways of knowing to achieve successful TOK analysis on their own. Teachers are strongly encouraged to consider shaping their treatment of various parts of the course through the use of the framework tools. While the subject guide states that the knowledge framework is not compulsory, neither are the ways of knowing required to form the foundation for addressing many of the prescribed titles.

Key Points

- The subject guide makes it clear that ways of knowing almost always operate together, and this should be reflected in the approach taken to them in essays
- The great majority of current prescribed titles invite candidates to select and indicate the areas of knowledge to be explored in the essay, but, as a rule, no similar imperative applies to ways of knowing in these titles
- Offering an explicit selection of ways of knowing at the start of the essay tends to undermine the claim above that they work together

how do we overcome this?

The candidate and the subject professional as knowers

As (a) TOK is a course about knowledge and (b) knowledge is a human construct, it is important to be clear about the relation between the two in TOK work. There is a place in TOK analysis for discussion of how knowledge is produced (often by expert practitioners in subject disciplines) but also by lay individuals including TOK candidates, and also for discussion of how existing knowledge is consumed and distributed. Naturally, the dominant bulk of the academic life experience of school students will consist of the latter, but the balance between these two relationships with knowledge demanded by each prescribed title is often indicated by their exact wording.

Phrases such as “the production of knowledge” or “knowledge... develops” (title 2) give clear cues, whereas “the pursuit of knowledge” (title 1) or “in gaining knowledge” (title 3) or “in knowledge” (title 6) or “the acquisition of knowledge” allow for more latitude. However, TOK essays can succeed only by acknowledging and exploring how the body of human knowledge is produced and extended and thus move beyond an exclusively individual perspective. One reason why the distinction between shared knowledge and personal knowledge was introduced was to draw attention to the need for balance in this respect, even though it does not map exactly onto the difference between knowledge production and consumption.

Key Points

- Candidates are advised to look carefully at the wording of prescribed titles in order to ascertain what kind of engagement with knowledge is being elicited
- Wherever possible, clear distinctions should be made between the processes involved in the production of knowledge and those involved in the consumption of knowledge

Aspects of essay content

As with previous sessions, a wide variety of examples was on offer in essays, but a preponderance of a particular group of them drew some concerns among examiners. Despite its length, the following is naturally only a subset.

1. Serendipitous discovery of penicillin by Alexander Fleming
2. Mark Rothko and environmental influences on his work
3. String theory and the role of evidence in the sciences
4. Margaret Mead's perspective during fieldwork in Samoa
5. The human aspects of the story of the discovery of DNA and of its structure from Friedrich Miescher to James Watson, Francis Crick and Rosalind Franklin
6. Bloodletting as an example of an obsolete practice in medical science
7. The value of the Enigma code and the work of Alan Turing
8. Alchemy as the necessary precursor to modern chemistry
9. Pablo Picasso and Guernica
10. Vincent van Gogh and Starry Night
11. Leonardo da Vinci, the Mona Lisa and Vitruvian Man
12. Isaac Newton and the compatibility of his scientific achievements and his religious orientation
13. Persistence of "anti-vaxxers" despite the exposure of Andrew Wakefield's claims in relation to MMR vaccine as fraudulent
14. The applications of imaginary numbers
15. Ludwig van Beethoven's deafness and reliance on "feeling"
16. Rounding of numbers (eg pi) as examples of simplification and inaccuracy in mathematics
17. Polynomials, factorisation and complexity
18. Music therapy as an application of knowledge in the arts
19. Different notations and ways of doing differentiation from Isaac Newton and Gottfried Leibniz
20. Thomas Edison and the invention of the light bulb
21. The Hiroshima bomb versus nuclear fission reactors with respect to the value of knowledge
22. Work in number theory by Pythagoras, Pierre de Fermat and Andrew Wiles
23. Membrane structure from Davson/Danielli to Singer/Nicholson and the fluid mosaic model
24. Galileo Galilei's house arrest and Pope John Paul II's admission of error in 1992

25. Friedrich Wöhler's blow to vitalism with the non-biological synthesis of urea
26. Atomic theories from John Dalton to JJ Thompson to Ernest Rutherford to Niels Bohr to Erwin Schrödinger
27. Elizabeth Loftus and John Palmer on language and eye witnesses
28. Francesco Redi, Louis Pasteur and the disproof of spontaneous generation
29. Alfred Wegener and continental drift
30. Lera Boroditsky's article on Australian aboriginal orientation
31. Caloric vs kinetic theory with respect to "natural selection" in scientific knowledge
32. Leonhard Euler's equation allegedly having value without application
33. Development of heliocentrism from Aristarchus to Copernicus
34. Thalidomide prescribed for morning sickness and leprosy
35. The outcomes of the work of Fritz Haber for fertilizer and explosives
36. The Riemann hypothesis, large primes and Internet security
37. The Treaty of Versailles and the subsequent rise of Nazism in Germany
38. George Orwell's perspective as presented in Animal Farm
39. Thomas Young's double-slit experiment and wave-particle duality in physics
40. The ethics of Edward Jenner's work on smallpox and vaccination
41. August Kekulé's dream and the structure of benzene
42. Antonio Damasio and somatic marker theory
43. Fritz Fischer and the alleged causes of WWI
44. Occam's razor with respect to Albert Einstein's special relativity and Hendrik Lorentz's ether
45. Gregor Mendel and overly neat experimental results for segregation and independent assortment (also Robert Millikan and determination of the electric charge on the electron)
46. Jackson Pollock's art and the use of WOKs
47. The Amish and rejection of modern technology
48. The Phillips curve and transient accuracy in economics
49. Lock-and-key and induced fit models of enzyme action
50. Spherical and hyperbolic geometries as perspectives in mathematics
51. Confirmation bias and persistent error in the accepted human chromosome number
52. CERN and the Higgs boson as applied knowledge
53. Standard rival interpretations of the Cold War: traditional, revisionist, post-revisionist
54. Albert Einstein and the cosmological constant
55. Edwin Hubble and expansion of the universe
56. Ignaz Semmelweis and childbed fever
57. Conventional current and electron flow
58. The Nanjing massacre and perspectives

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| <p>59. Alfred Adler and schemas in psychology as the basis for perspectives</p> <p>60. Biston betularia and industrial melanism as an example of natural selection</p> <p>61. Detection of gravitational waves in accordance with predictions from Einstein's theory of general relativity</p> <p>62. Feynman diagrams and quantum electrodynamics with respect to simplicity (!) and understanding</p> | <p>63. Physiology from Galen to the discovery of blood circulation by William Harvey</p> <p>64. The complexity of the chemistry of photosynthesis as presented at various stages of education</p> <p>65. The patient's "perspective" in connection with the use of placebos in medical testing</p> <p>66. Heinrich Hertz and the subsequent application of radio waves</p> |
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From this list, a number of rough distinctions can be made.

Some examples (e.g. 9, 10, 20, 41, 58) appeared with great regularity but, with some additional thought, could have been substituted by others that would function at least equally effectively, and perhaps have offered additional insights.

Some (e.g. 1, 15, 18, 27, 30) have "gone viral" and could be found in many essays – even in the service of different titles. Examples of this type tend to gain momentum, persist over a few sessions and then recede.

Some examples (e.g. 25, 26) stem directly from candidate experience in other DP courses, and as such are to be welcomed as evidence for a primary aim of TOK in action. However, there may be other such points of contact across the diploma that could also be exploited. Candidates often included their own experiences with extended essays and internally assessed tasks, and this is to be encouraged as long as they are described in enough detail to illustrate the claims at large.

Many of the examples above do have much potential when they have been mastered by candidates and applied in situations where they support or illustrate the exact claims being made about knowledge. Unfortunately, this is often not the case, and they are sometimes treated with a laziness that can border on disrespect.

Examiners are aware that the ideal of the TOK essay as the culmination of the student's personal adventure to date in knowledge is perhaps unrealistic for many candidates on grounds of the limits of personal experience or motivation, but it must be pointed out that the constraints imposed by these factors can be exacerbated by the temptation to rely on external sources designed specifically to "help" with the task. As there is a finite quantity of such material available, shared patterns of essay structure and content across schools often become evident to examiners. If a candidate's first move is to search the internet for material that responds directly to a prescribed title, there is no way back from the "contamination" of thought that has occurred, and the short-circuiting of the process of internalization often leads to correspondingly poor work. Teachers are strongly urged to lead their candidates to formulate a personal and independent response to a title before allowing the wider world into the task that lies before them.

Key Points

- Candidates are strongly advised to resist the temptation to search for responses to prescribed titles on “help” sites or elsewhere as, once accessed, they contaminate the candidate’s thinking and cannot be “unthought”
- Some examples are inherently ineffective because they are simplistic and cannot support the quality of analysis that is required in TOK
- Some examples are employed ineffectively because they do not support the point being made or because they are described without due care for accuracy
- Some examples have their origins in other DP courses, and these should be generally encouraged
- Fresh examples are more likely to be effective, but even relatively common ones can work well if they are used with respect for their nature

Feedback on specific titles

1. In gaining knowledge, each area of knowledge uses a network of ways of knowing.”
Discuss this statement with reference to two areas of knowledge.

As with all prescribed titles, the exact wording of this one was very important. Sadly, many candidates paid little or no attention to the inclusion of the word “network” with reference to ways of knowing, and it was difficult for such candidates to recover from this omission. In most cases, the result was an essay that outlined in isolation the roles of ways of knowing in each of the selected areas of knowledge. In the worst cases, these ways of knowing seemed to comprise little more than a list of unconnected items. This is exactly the problem identified earlier that candidates and schools seem reluctant to embrace the suggestion in the current subject guide that ways of knowing be thought of (and taught) in a linked systematic way rather than separately. Examiners were disappointed to see so little engagement with the network concept because its key properties should not be too hard to identify. Furthermore, the encouragement given in the subject guide and other official documents to think of ways of knowing as interconnected should have chimed with the idea that they could form such a structure.

Many candidates turned the title on its head with a posited counterclaim – namely that there might be areas of knowledge dependent upon just one way of knowing – but unfortunately even the failure to identify such an area would not succeed in establishing that the multiple engagement of ways of knowing constitutes a network, with all that this concept implies. Better essays explored how the methodologies of some areas might be viewed as clusters of ways of knowing, with interactions such as feedback and hierarchy to the fore.

2. “Knowledge within a discipline develops according to the principles of natural selection.” How useful is this metaphor?

Responses to this title revealed a lot of misunderstandings about the nature of natural selection. In particular, candidates tended to recapitulate some distortions that have historical significance – such as the notion that the process routinely generates a linear sequence of forms that show progress according to some objective universal scale. Some essays did not get far past the general idea of living and dying, and while many candidates did enumerate with some success a set of features of natural selection in the introduction, often they were subsequently ignored. These features often seemed to underplay the role of the environment in steering the process.

When candidates turned their attention to applying the process to the development of knowledge, the aforementioned limitations took their toll. It was assumed that natural selection of knowledge would lead inexorably towards truth (rather than being geared towards survival), leading to unconvincing claims about the inappropriateness of the metaphor for the description of knowledge in the arts, ethics and religion, where progress could be contested. Such problems were compounded by a tendency to consider the development of knowledge in a vacuum rather than as a response to particular cultural, historical and geographical circumstances.

There were, however, some thoughtful and carefully constructed essays on this title that considered not only the appropriateness of the metaphor in relation to some specific disciplines (as invited by the title, rather than whole areas of knowledge), but also applied some variants of evolutionary theory such as gradualism and punctuated equilibrium.

3. “The knower’s perspective is essential in the pursuit of knowledge.” To what extent do you agree?

Many responses to this title suffered from an insufficient unpacking of the idea of the knower’s perspective; indeed the focus was often on “perspective” alone with the implications of the identity of the knower left aside. It was common to find candidates labouring with the effort of identifying the elements that go into building and influencing perspective rather than focusing upon the more salient task embedded in the title of examining the influence of this perspective on the pursuit of knowledge. Sadly, many candidates equated perspective exclusively with bias or distortion, leading to an overly negative approach and to the perennial struggle of calibrating this “bias” against some unattainable objective standard.

Weaker work made no distinction between “perspective” and “perception” – thus generating some conceptual confusion, and some candidates made the initial assumption that perspective was exclusively the product of ways of knowing and proceeded to convert the title into one that demanded predominant treatment of the latter. An alternative yet related strategy was to compare the knower’s perspective with personal knowledge – with perhaps a greater degree of success where the interplay with shared knowledge served as the basis of analysis. The contrast between science and art was a popular destination, in which the knower’s perspective was allegedly of minimum and maximum value respectively. Stronger candidates explored the limitations of this assumption.

4. “Without application in the world, the value of knowledge is greatly diminished.” Consider this claim with respect to two areas of knowledge.

Most candidates succeeded in trying to establish a relationship between application and value of knowledge, but a minority treated them separately and failed to reach any worthwhile conclusion with respect to the title. Many responses to the title were largely limited to the assumption that knowledge is applied because it is useful and that value is a function of utility so the claim in the title could be supported on that basis. While with proper exemplification this line of argument could be convincing, the prospect of a circular argument often hovered over the implications of this construction. Furthermore, examiners expected more in terms of nuance. Firstly, the title expressly mentions “application in the world”, and so some sharpness of definition as to what is taken to constitute the world was required. Stronger candidates recognized that material aspects needed to be complemented by, among other things, the impacts of knowledge on mental life and the functioning of society.

Many candidates offered an initial distinction between practical and theoretical knowledge, and set off from there – eventually concluding that theoretical knowledge could be considered to have inherent value either because that would be realised through eventual application in the future (agreeing with the claim), or because its mere existence conferred value which could be enjoyed by the possessor (as a counterclaim to the title). As a rule, the weaker responses struggled to find examples that challenged the title, except for the tactic of relativizing knowledge with respect to the individual (e.g. knowledge of subatomic structure of value to the physicist but not the musician, etc.), or even the candidate herself (e.g. “I shouldn’t need to learn literature because I want to be an engineer, so it has no value to me”). Many essays centred on knowledge that made money and railed against wasting resources on knowledge that didn’t. Some essays took a different tack altogether by considering application as a necessary part of the methodology employed to generate the knowledge (such as empirical testing in the natural sciences) rather than as the fate of the knowledge once established, but candidates found difficulties in generalizing this approach across different areas.

5. To what extent do the concepts that we use shape the conclusions that we reach?

Many candidates struggled to succeed with this title. Central to this fact was the extreme poverty of examples of actual concepts offered in the essays – almost certainly evidence for a lack of understanding as to what might count as a concept in the first place. This is somewhat troubling given that candidates are engaged in an educational programme that prides itself on a foundation of conceptual learning. Some essays consisted almost entirely of vague dissertations about “concepts” in which none were identified; a larger number tried to substitute for concepts other aspects of the TOK course, such as ways of knowing or perspectives. In this way, this title was rendered barely distinguishable from some of the others. Similar displacement behaviour was noted when concepts morphed into paradigms or ideologies or “schools” – all of this indicates the desirability for TOK teachers to address the notion of a concept more directly in their courses, given that it is a branch of the knowledge frameworks found in the subject guide.

Among the very few strong responses to this title were those from candidates who identified alternative concepts related to the same topic that might lead to different conclusions, and who considered that there might be a dynamic two-way interplay between concepts and conclusions.

6. "In knowledge there is always a trade-off between accuracy and simplicity." Evaluate this statement in relation to two areas of knowledge.

Candidates exhibited a wide range of competencies with regard to their marshalling of the two concepts at the heart of this title. Accuracy was often helpfully connected to truth, while simplicity was widely interpreted to refer to the ease with which knowledge could be understood. It was unfortunate that only a small proportion of candidates considered a broader conception of simplicity that could encompass the idea of elegant brevity or economical description of a wide variety of phenomena. Simplicity was often substituted with complexity, which probably helped candidates to grasp the relationship by converting it into a direct one with accuracy; however, this move might have shifted the focus of the title to a degree. The terms "accuracy" and "precision" were routinely used interchangeably, which led to some tricky issues when the sciences were under consideration. Some candidates misinterpreted the notion of a trade-off and insisted that accuracy and simplicity were mutually exclusive properties of knowledge.

Better responses to this title grappled with the implications of Occam's razor as a potential counterclaim to the title (more simplicity as a pointer toward accuracy), and explored the idea that an excess of data might lead to the temptation to identify patterns that do not in reality exist (hence less simplicity and less accuracy). Contrasts between mathematics and the arts were common.

Section 2: The presentation

Component grade boundaries

The following boundaries were applied for this session, exhibiting a lowering of one mark from those applied in the M15 and N15 sessions:

Grade:	E	D	C	B	A
Mark range:	0 - 1	2 - 3	4 - 5	6 - 7	8 - 10

General

Thanks are extended to 48 examiners who moderated the TOK presentations this session. Dynamic sampling was introduced last November session for the moderation of presentation preparation documents (TK/PPDs). Dynamic sampling means that examiners examine a small sample of work from a school and either confirm marks or moderate them. If they agree with the marks awarded by the teacher those marks stand. In cases of difference, a further sample of work is released for inspection to ensure a balanced judgement. Dynamic sampling has enabled more precise moderation.

All samples are allocated randomly. Therefore, examiners do not receive them by school. However, the TK/PPDs from any given school will all be allocated to the same examiner. It is only after examiners have completed the moderation process that they can view the TK/PPDs grouped by school. This is so that they are able to write the IA Feedback if required.

As noted in previous sessions, it was evident that the documents which were appropriately used and completed represented better presentations. In this way some schools showed a sound understanding of the presentation task and are to be commended. It continues to be disappointing to find that some candidates do not understand the nature of the presentation task and it is a matter of very grave concern that a few teachers gave high marks to presentations where the TK/PPD showed little and sometimes no evidence of TOK understanding, or even that a TOK course had been implemented. The main objective of the TOK presentation is to assess the candidates' ability to analyse a real-life situation from a TOK perspective and it is this ability, as described in the assessment instrument, that determines the number of marks the candidate will receive for the presentation. It is therefore of concern that there was often no such analysis in the content of the candidate section or indeed in the teacher comments.

The TK/PPD has a two-fold purpose. Firstly, and as indicated by its name, *presentation planning document*, it is meant to be used for preparation and planning. As such it is intended to aid the candidate in the planning of the presentation by giving the candidate direction through the different parts of the candidate section. A well-planned presentation will be a good one; a badly-planned presentation will most likely be a bad one. Secondly, it is used by examiners to moderate the teacher's assessment. Therefore, all content that needs to be in the delivery of the presentation should be on the TK/PPD. Despite knowing this some candidates made very little effort to complete the document clearly and appropriately. The two purposes demand flow and clarity of the TOK analysis to be demonstrated in the document. Examiners cannot guess what may have been meant and there must be evidence in both the

candidate section and the teacher's comments section for the mark awarded by the teacher. When that is not the case examiners have to moderate marks accordingly.

Key Points

- Teachers must ensure that they and their candidates understand the nature of the TOK presentation
- As they are planning documents, TK/PPDs must show how an argument will be developed using TOK concepts and TOK analysis
- As TK/PPDs will be used for moderation, candidates and teachers must ensure that what they state in their respective sections is clear to a third person

Some specific recommendations regarding the TK/PPD are made below following what was viewed this session.

The candidate section

- *Describe your real-life situation*

The requirement is for ONE real-life situation to be described.

The real-life situation should be substantive and concrete. From such a real-life situation it is possible and easier to extract a knowledge question. Some candidates seemed to find it difficult to use something real and resorted to inventing situations which were usually superficial. Lengthy descriptions are ineffective.

This is an example of a concrete real-life situation which is clearly and sufficiently described:

A 14-year old boy in USA took his homemade clock to school to show his teacher. He was arrested on suspicion that it was an explosive device. When it was proven that it was indeed just a clock he was released. The boy is Muslim and his name is Ahmed Mohamed.

- *State your central knowledge question (this must be expressed as a question)*

The requirement is for ONE knowledge question to be stated. The instruction is for 'your' knowledge question. Therefore, candidates must extract their own knowledge questions from their real-life situations.

It is not permitted to use prescribed title questions in any form as knowledge questions. Therefore, presentations which use them cannot be awarded any points.

Knowledge questions are second-order questions. This means, as stated in the TOK guide (p.20), that 'instead of focusing on specific content they focus on how knowledge is constructed and evaluated'. Candidates must pay particular attention to that focus and ensure that the knowledge question which they extract from their real-life situation is a second-order question. Questions such as 'what ethical considerations justify the possession of firearms?' or 'to what extent is it ethical to prevent immigration by refugees from troubled areas?' are not second-order questions because they focus on ethics, not on knowledge. Their answers will consider ethical dilemmas, not knowledge. There were many presentations with questions

similar to these and candidates must be wary of choosing ethical topics for their presentations. Candidates (and their teachers) should always have in mind that a knowledge question must be **open, general and about knowledge**. That is the checklist. Furthermore, questions should not be so broad that they are unanswerable (e.g. ‘what is art?’).

For all of the above reasons, candidates should not begin the planning of their presentations until they have determined the quality of their main real-life situation and their central knowledge question.

This is the knowledge question which was extracted from the real-life situation above. It is a second-order question so it serves as a good example:

On the basis of what knowledge and evidence do we form our cultural beliefs?

- *Explain the connection between your real-life situation and your knowledge question*

Many candidates found it difficult to do what is required here. What is needed is an explanation of why their central knowledge question is raised from their main real-life situation. Extracting a knowledge question from a real-life situation should not be forced. The knowledge question should be the question about knowledge which one may ask oneself in the context of that real-life situation. All too often candidates repeated their real-life situation and their knowledge question here or started to tell what would be included in the presentation. The connection was thus not explained. Using the example above,

This is how the candidate in the example above explained the connection between her real-life situation and her knowledge question:

A cultural belief that all Muslims (especially if called Mohamed) are terrorists is shown in my real-life situation and it probably comes from knowledge and evidence of very few and very selected incidents (those involving Muslims). Here it is a negative stereotype made stronger by fear (emotion) and people usually don't think of on what basis they hold their beliefs. That made me ask my knowledge question.

- *Outline how you intend to develop your presentation, with respect to perspectives, subsidiary knowledge questions, arguments, etc. Responses below can be presented in continuous prose or as bullet points.*

The outline does not fulfil its purpose if it presents the structure rather than the ideas that will be used. A list of headings or of questions is not an outline. The outline is for a TOK presentation, therefore TOK concepts and TOK terminology must be used.

The outline must present the ideas that will be developed “with respect to perspectives, related knowledge questions (previously referred to as “subsidiary knowledge questions”), arguments” – that is compulsory. It is a TOK presentation, therefore the outline must refer to second-order, not first order, claims and questions.

It is a cause of concern that many candidates do not complete this section with enough detail to allow the examiner to see how the real-life situation has been analysed using the tools of TOK. Also of concern is the number of candidates who thought that many real-life situations

had to be considered in depth, thus reducing the room available for what should be the focus of the outline.

- *Show how your conclusions have significance for your real-life situation and to others*

Conclusions must be drawn. Candidates must show how their arguments progressed and what judgements they have reached. In doing so, they will show how consideration of the KQ was meaningful to their RLS, but also to other situations. Both parts of the instruction must be answered. Many candidates ignored the 'and to others' instruction.

The teacher section

- *Provide comments to support your assessment of the presentation*

Some teachers provided succinct and helpful comments which served to explain the mark awarded. On the other hand, some made the task of the examiner difficult because the comments merely described the presentation step by step or they were too broad or sketchy and thus did not serve to support the marks awarded. Other unhelpful comments were those which copied parts of the assessment instrument - these do not explain the marks awarded for a particular presentation. Comments relating to the effort made by the candidate or how many teachers viewed the presentation are not relevant.

Key Points

- Teachers need to ensure their candidates complete all parts of the TK/PPD clearly and appropriately- Presentations must be focused on one central knowledge question extracted from one specified and substantive real-life situation
- Teachers must help their students distinguish between a knowledge question and an ethical (value-judgement) question
- The Candidate Section provides the plan and explains it; the Teacher Section explains the assessment
- Teachers must use the assessment instrument to award marks
- The Candidate Section provides the plan and explains it; the Teacher Section explains the assessment

Recommendations for IB procedures, instructions and forms

Electronic marks entered on IBIS must match the ones on the TK/PPDs. On some occasions they were found to differ.

The samples from a school must refer to different presentations. Therefore, there may not be more than one TK/PPD for the same presentation in the sample.

Teachers are reminded that they assess the presentation, not individual candidates, so that in group presentations all members of the group must receive the same mark. Therefore, the teacher comment must be the same for all TK/PPDs of the same presentation.

A few schools are still using 'old' TK/PPDs or writing their candidates' names on them. Schools are requested to ensure that they use the latest version of the TK/PPD and to preserve the anonymity of the candidates. There were several schools which uploaded hand-written documents. This was problematic in some instances because of the poor handwriting and also because some candidates used it as a means to get more words in, so the handwriting was so tiny that it was illegible. Teachers are reminded that examiners are not required to mark illegible writing, which means this could severely disfavour the candidate. All candidates are required to complete the TK/PPD electronically.

Key Points

- TK /PPDs in a sample must be for different presentations
- Candidates in group presentations (two or three) must receive the same mark and the same teacher assessment comment
- The latest version of the presentation planning document (TK/PPD) must be used and it must be completed electronically

Recommendations for the teaching of future candidates

As stated above, examiners were disappointed to find many TK/PPDs which showed little or no understanding of the nature of the TOK presentation. Candidates and their teachers are reminded that second-order claims and questions must be examined and that that has to be done using TOK tools.

Teachers must advise their candidates on what constitutes a real-life situation. They should aim for one which is concrete and substantive.

The concept of the knowledge question still eludes many candidates. Teachers must ensure that their candidates understand that it refers to a question to do with knowledge and that to answer it they will need to show TOK analysis. They must constantly keep in mind that they need to express 'how I/we know this' using TOK concepts and terminology.

Teachers should use the TOK materials available to prepare and deliver sound TOK courses and follow the recommendations for the presentation task.

Key Points

- A successful presentation will use TOK terminology and concepts, and will reflect that a sound TOK course has been implemented
- Teachers should advise their students on their choice of main real-life situation and central knowledge question
- Teachers must make use of IB TOK materials which support the subject