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Theory of knowledge

TOK bingo

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Aims

- Students will be able to identify 'TOK moments' in their subject classes.
- Students will be able to explore the TOK issues they raise within the context of the discipline, the context of the lesson and with the help of the subject specialist teachers.
- (Non-TOK) subject teachers will be able to identify and learn TOK concepts and KQs and apply them within their own teaching.

Objectives

Students will fill out the TOK bingo sheet throughout their other classes, working towards a TOK bingo.

Summary

Students, teachers and school structures too often see TOK as entirely separate from the normal subject teaching that occurs in subject specific teaching. This TOK Bingo exercise encourages students to be on the look-out for TOK moments in their learning outside the TOK classroom thereby underscoring the importance of TOK thinking skills across disciplines. Non-TOK Teachers also often find the subject confusing or don't take it seriously. This activity is also therefore aimed at educating other teachers about TOK and giving them a sense of what it entails, thereby encouraging them to incorporate more of TOK's critical thinking into their own teaching.

Task

Each student brings the TOK Bingo sheet with them to his or her various lessons. During the course of the teaching students identify a TOK moment and tick it off their bingo sheet. First TOK student to create a horizontal, diagonal or vertical line wins.

To receive credit for the box, however, students must:

- Raise the TOK point in the class in an appropriate manner. This might asking a question during discussion or meeting the teacher after the class for a discussion
- The teacher must then initial or sign off the box indicating that the student has raised the point.
- Many of the boxes are closely related or have obvious overlapping applications. Students should choose one box per one TOK moment. No 'doubling-up'!

TOK teachers should make time for students to discuss their TOK moments – explaining what it was, how they engaged with the issue in class and the outcome of those discussions.

Students nearing a Bingo, or trying to tick off a particular box should be actively looking for the appropriate TOK moment or explicitly raise it in the class.

This exercise is not meant to be a *challenge* to the practice of the teacher, so students must approach the exercise with due respect and maturity. It might be helpful for TOK teachers to alert the staff that this exercise is being done so they will understand the nature of it and can be sensitive and charitable to it when it comes up.

Links to specification

Of course the various AOKS and WOKS will be captured in the exercise.

Knowledge Frameworks: The various cells on the bingo chart can be applied in discussion to the various aspects of the KF. “Nice Try...” for instance can be tied to the historical development of a discipline or “Word Play” can be tied to Concepts and Language. Many of them will be tied to Methodology, for instance “Computer says ‘no’” or “Known Unknowns”

Explanations and Possible examples

Whether or not something genuinely constitutes a ‘tick’ is a matter of discussion – and this is precisely the point of the exercise. None of these explanations or examples are conceived of as definitive or exhaustive. They are opportunities for analyses, not the conclusions of them. They are meant to begin conversations, not end them.

Two roads diverged

In many cases there may be more than one hypothesis actively being explored or tested or used within a discipline. Various approaches to particle physics or historical hypotheses might be examples.

The stories we could tell

Paradigms can be explained as set of interconnected beliefs (stories) that we use to make sense of the experiences we have in the world. Scientists might have a ‘materialistic’ paradigm dictating the sorts of evidence available to them; a Marxist might explain certain historical evidence in a particular way. Sometimes these sets of beliefs prove inadequate and need amending or altering in order to take into account the new evidence.

A thousand words

Attempts to capture those representations of data (maps, models, graphs, illustrations, metaphors) which manipulate, shape, guide or spin the knowledge we take from it. The Periodic Table both gives us knowledge about individual elements but then also captures a particular sort of *relationship* with other elements. A Map will distort the world in various ways. The use of metaphors in the description of ethical dilemmas will offer particular avenues to think about the dilemma which may shift depending on the metaphor used.

Unknown unknowns

When a teacher points out the edge of current knowledge in a discipline.

Trust me, I'm a scientist

Being 'scientific' is thought of as automatically lending a belief reliability and credibility.

Overcome by emotion

When 'too emotional' is thought of as limiting our ability to construct reliable knowledge. Types of bias in History or the Natural and Human sciences might be characterised in this manner.

In black and white

I've often disagreed with the text book and use this to encourage deeper thinking in the students. Why do I believe my interpretation/evidence/analysis is *better*?

Word play

While an issue can often be pared down to 'semantics', this rarely means that the matter is somehow inconsequential!

Nice try

Of course accepted knowledge changes over time. Teachers might be talking about what was once accepted and how this changed (Structure of the Atom is a favourite and well-trodden example)

'There is no spoon...'

The limits of the senses in a number of disciplines is important to pay attention to. Any analysis of the fallible nature of the senses in constructing knowledge could fit here.

Intruder alert

One of the main outcomes of TOK should be to encourage a challenging of the traditional discipline and AOK distinctions. History uses science, science informs ethics, ethics limits science, art teaches ethics and history... the list goes on.

Now that you mention it...

A real learning opportunity. A student or teacher changing his or her mind, or making genuine progress in understanding.

What makes you think that?

All too often teachers teach but don't justify or back up the knowledge being offered. Here a student would be looking for more than just the fact... what about how that fact has been developed or justified?

Big Brother next door

Propaganda is all too often limit to Hitler and Stalin. Of course there are examples everywhere and at every time: general elections are rife with it, NGOs make effective use of it, commercials make money off it. Of course, we'd need a definition of 'propaganda' that allows for a wider application in less sinister circumstances.

'Never doubt what nobody is sure about'

A healthy scepticism often drives the search for new data. Could be easily tied to Falsificationism.

Freedom fighters or terrorists?

This time rather than uncovering definitions (Word Play), here the idea is a more non-conscious manipulation of our ideas, beliefs and knowledge through language. Calling someone a "migrant" might imply a different relationship with them than calling them a "refugee".

Back in my day...

Memory plays a large role in our knowledge, particularly in first-person accounts of historical events. Is it reliable?

Because I said so...

Students may be learning about periods of history where accepted knowledge was based on authorities dictating knowledge, but their own classes might be full of it. When a student's science experiment fails, does the authority of the tradition or the teacher mean that it was the experiment's fault and not the theory's?

'We are the dreamers of dreams'

The scientific method might rely heavily on a scientist imagining what will happen if... ethical 'experimentation' can often rely on hypothetical scenarios which isolate variables in our thinking about ethics. Historical reconstructions of fossils, foundations and artefacts require imagination as well.

'He who mistrusts most should be trusted least'

Faith/trust in certain approaches, paradigms and narratives might ground much of our knowledge in science or history. Inductive reasoning might also be thought of as faith.

Is it art?

Can equations be 'beautiful'? Can't the Periodic Table be thought of as a masterpiece?

Blinded with science

Even scientists get it wrong when they don't take into consideration the fallibility of their methods or when their data is manipulated or presented in a way to confuse and confound. The pharmaceutical industry might be a target here.

To the victors

Students of history often have a good grounding in the biases lurking in the historical method. This would be a good opportunity to identify then later use a genuine example of historical bias. Students more often claim that IF someone from such and such a country were to write a history, then they would naturally conclude such and such. Hypothesis is not good evidence when making claims about people's behaviour.

Wait a minute...

Is an attempt to capture that moment when a student realises that the facts don't tell the whole story, that to make sense of the wider picture a broader perspective must be taken into account. Knowing more about an art work, for instance, will enrich the experience of viewing the art itself. These other facts might be from a different AOK (knowing the history of a painting or the artist influence our experience of the art).

The truth is out there

Could very easily be part of a conversation about what exactly constitutes science. I remember a student whose mother was a homeopath taking serious issue with one hapless teachers' comments on the un-scientific nature of homeopathy.

‘Hey ref — what game you watching?’

How is it that the same facts can lead to such different conclusions? Very often it is because the set of facts are not, in fact, identical. Why can film critics differ on their judgement of a movie? Do all anthropologists agree on the same interpretation of ancient cultural artefacts?

Yea, right

This might stem from the teaching of a poorly justified theory, or indeed, a teacher’s poor justification of the facts being presented!

Wait...what?

Poor argumentation in any subject should be dragged out into the open. Student’s highlighting poor argument in the discussion would also be fair game. *Post hoc ergo propter hoc* is a favourite stumbling block in the sciences and history. *Ad hominem* is popular amongst students.

A cute angle

HL Mathematics teachers in particular are always going doe-eyed over various equations and concepts, but physics teachers are also quite prone to sentimentality.

How did we get here?

Very often the blind adherence to reason puts us in the position of believing certain things which fly in the face of common sense. And sometimes this is correct. But just as often we find ourselves in a position of accepting a position which our experience tells us is mistaken. I tend to think that blind adherence to theories like psychological egoism puts students in the position of denying their own experience of their altruistic motives. Which do we believe: the theory or our own experience of our motives? Yes, of course, sometimes we mistake our motives, but surely not always.

Known unknowns

What are the *current* questions driving a discipline? What questions have pushed knowledge forward in the past (links to Historical development in the KF)

Twisted tongues

Always a favourite in political debate. Can student identify a moment in the election of the class president? In Model United Nations? In Debate club?

Sheeple

Here again we explore the sometimes conflicting nature of common sense and considered reflection. Are tables *really* mainly empty space? Would you change your mind about what’s behind door number three if you were on Monty Hall?

Clever counting

Statistics are the driving force in the human sciences and they are favourite tools of politicians the world over. Ben Goldacre in his *Bad Science* blog and TED talks explores their use in science to good effect.

And...?

Some facts in some disciplines have just enough bearing on reality to care about them in our everyday world, others don’t. What is the value of knowledge? How does knowing the chemical make up of the atmosphere of Jupiter help me be a better person?

'Computer says no'

How much of our knowledge is dependent entirely on our technological innovations? Electron microscopes, X-Rays, life-support machines and Ritalin all give us access to questions and knowledge claims that were unknowable before their discovery. What future innovations might expose the limitations of our current knowledge?

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