FOR THE
IB DIPLOMA

Theory of Knowledge

Teaching for Success

Carolyn P. Henly
John Sprague

SAMPLE PAGES

HODDER EDUCATION
AN HACHETTE UK COMPANY

The Publishers would like to thank the following for permission to reproduce copyright material.

Photo credits

[tbc]

Acknowledgements

[tbc]

Hachette UK's policy is to use papers that are natural, renewable and recyclable products and made from wood grown in well-managed forests and other controlled sources. The logging and manufacturing processes are expected to conform to the environmental regulations of the country of origin.

Orders: please contact Bookpoint Ltd, 130 Park Drive, Milton Park, Abingdon, Oxon OX14 4SE. Telephone: +44 (0)1235 827827. Fax: +44 (0)1235 400401. Email education@bookpoint.co.uk Lines are open from 9 a.m. to 5 p.m., Monday to Saturday, with a 24-hour message answering service. You can also order through our website: www.hoddereducation.com

First published in 2020 by

Hodder Education,
An Hachette UK Company
Carmelite House
50 Victoria Embankment
London EC4Y 0DZ

www.hoddereducation.com

Impression number 10 9 8 7 6 5 4 3 2 1

Year 2024 2023 2022 2021 2020

Typeset in GoudyStd 11/13 pts. by Aptara Inc.

Printed in

A catalogue record for this title is available from the British Library.

ISBN: 9781510474659

CHAPTER 11

The human sciences

OBJECTIVES

After reading this chapter of the student book, students will be able to:

- identify and reflect on the differences between the natural and human sciences
- identify and understand some of the main perspectives available in psychology and economics
- reflect on elements of the 'scientific method' as it applies to human behaviour
- understand the difference between qualitative and quantitative data in the human sciences and reflect on the effect of this distinction on the reliability of the AOK
- explore the role of models in economics and reflect on how well they apply to the world
- reflect how ethical values are an important part of the scope of the human sciences and how this might constrain the development of new knowledge.

Introduction

Many teachers use the human sciences as a way of offsetting the conversations they have had about the natural sciences, which means that generally it will come after their unit on the natural sciences. Many teachers also weave their discussions of the human sciences and the natural sciences together – shifting between the two in relation to the subtle nuances between the two AOKs. As always, the knowledge framework is a good way of managing this comparison. We have focused on two main issues here and in the student book, the 'scientific' status of the human 'sciences' and the relationship between various perspectives in the human sciences, both in comparison to the natural sciences.

Scope

A favourite discussion in TOK classrooms stems from the question: 'What makes the various disciplines in the human sciences 'sciences' at all?' This is the primary issue in the scope section of the human sciences chapter in the student textbook. This general tension and a variety of related questions are all hinted at in the example knowledge questions listed under scope in the TOK subject guide.

This question requires a careful exploration of the scope of science more generally, contextualized by considerations of both the natural and human sciences, and it is worth spending a bit of time on this (and guaranteeing that this discussion is raised whenever the opportunity is provided in both AOK sections). This is because many of the critical discussions of the assumptions, limitations and perspectives in the human sciences can trace their origin in the challenges of disciplines like psychology, economics, human geography or social and cultural anthropology being considered 'sciences'.

ACTIVITY

1 Ask students to consider the list of subjects offered by the IBDP under groups 3 (Individuals and societies) and 4 (Sciences). What do the disciplines within each group have in common? What are the main differences across the groups?

2 Individuals and societies includes economics, psychology, global politics, social and cultural anthropology and geography, which in the TOK curriculum would normally land under human sciences. What is it about these disciplines that makes them *scientific*?

Likely discussion points arising from this activity include:

- Any 'science' focuses on a full and precise description and explanation of the physical objects and events in the world.
- The sciences all incorporate a method which prioritizes observation and prediction and uses experimentation for the construction and testing of hypotheses.
- The processes studied by the *natural* sciences are considered *deterministic*.
- Human beings are both objects in the world, but also *persons* with their own *wills* (desires, plans and projects) and are therefore hard to predict.

A good way of approaching this is through an explicitly comparative approach, like the one used in the student book where we ask the students to fill in a table comparing the natural sciences and the human sciences. This is an introductory activity so it would be worth holding on to the students' responses so that they can gauge their learning over the course of the unit.

KNOWLEDGE QUESTIONS

Relevant knowledge questions from the TOK subject guide:

- Is it possible to discover laws of human behaviour in the same way that the natural sciences discover laws of nature?
- Are predictions in the human sciences inevitably unreliable?
- Is human behaviour too unpredictable to study scientifically?

These three questions cut to the heart of the main point you will likely be discussing and illustrates the important point we have been making, that the elements of the knowledge framework overlap considerably. Here are two issues being explored:

- The nature of science (scope) is to develop '*law-like generalizations*' which describe the regularities we see in the world.
- The methods of this AOK depend on what is believed to be the nature of the AOK.

These questions take for granted that science is out to identify and articulate law-like generalizations. The assumption is that the natural world is incredibly regular; it seems to follow regular patterns and the role of the scientist is to observe them and describe them. Scientific laws are these descriptions. Boyle's Law in Chemistry (or the Boyle-Mariotte law), for instance, suggests that there is an inverse relationship between the pressure of a gas and its volume when the mass and temperature remain the same. This law not only describes the individual instance Boyle observed in his lab in the seventeenth century but is thought to describe all ideal gases in all parts of the universe. Of course, this claim

(that all ideal gases 'follow' the same law wherever they are in the universe) must be an assumption because we have not tested this everywhere in the universe.

What the laws provide are predictions. We know (assume) that the law applies everywhere so when we encounter gases, we can predict what will happen. The student chapter opens with a discussion of the Rosetta spacecraft and the predictions which allowed us to be reasonably sure that we could send it off and that ten years later we would know just where it would be.

Discovering these types of 'laws' to describe individual human beings, however, is far less easy an endeavour. Gases and planets, spacecraft and hurricanes all 'follow' impersonal laws. Human beings, however, tend to do whatever it is they want, and they are notoriously capricious in their wants. This lack of regularity makes it incredibly difficult to predict their behaviour. Of course, the better we know individuals the better we can predict their behaviour, but the prediction is never based on natural laws about how the physical universe works. So, it would seem the knowledge questions must be answered by downplaying the predictability of the human sciences and questioning their status as sciences.

Humans are not as predictable as events in the 'natural' world

However, descriptions of how people behave at a wider level do tend to be more predictive (this idea is developed throughout the chapter in the student book). There is something about the human psyche that makes it possible to predict how groups of people tend to behave. Psychology is the study of the relationships between cognition and human behaviour and here the assumption is that people tend to be quite similar in this regard. Economics assumes that people tend to behave similarly as well, this time in relation to their attitudes and behaviour related to the distribution of goods and resources. Here again, we might argue that at the macro level we find that we can observe clear tendencies in human behaviour.

Nevertheless, we cannot ever claim that human beings can now be the subject of predictions to the same degree as natural objects, although some who wish to emphasize our physical natures might be holding out for a physical description and understanding of human behaviour. Describing human behaviour in this manner would subsequently provide far stronger predictions, based on the same natural laws that we use to describe the world around us.

TEACHING TIP

Many teachers are not very familiar with the first-order knowledge from other subjects, but it is worth keeping in mind that the TOK teacher is not responsible for understanding the first-order knowledge. You might find that there are students who better understand Boyle's Law or other first-order knowledge and you can rely on them to explain it to the other students. The TOK teacher is meant to help the students understand the second-order aspects of the knowledge, as we have tried to do here.

Your students may have more first-order knowledge about some topics than you

KNOWLEDGE QUESTION

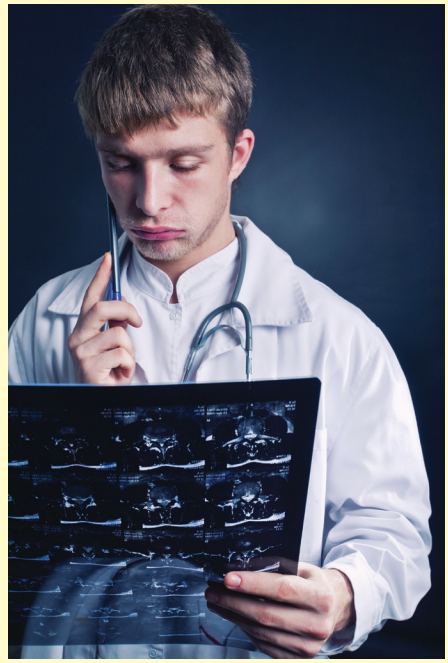
Relevant knowledge question from the TOK subject guide:

- Can other people know us better than we know ourselves?

CONNECTION TO: THE CORE THEME

The knowledge question above from the knowledge and the knower section of the guide (page 18), can be used as a way of unpacking students' ideas about the authority of academic disciplines in their own thinking. We'll explore this later in this chapter in relation to ethics. Students might fully accept that social or human scientists can tell us more about ourselves than we might care to admit. Psychology is full of examples (such as implicit bias, explored in the student book's perspectives section) of the discipline claiming that there is some aspect of us and our own mental states that they know better from the outside than from the inside.

But we might challenge this. Do we have to accept the authority of an economist who uses decision theory to explain why we make the decisions we do? Is the body of knowledge in psychology so powerful that we have to accept its claims about why we form the attachments we do?



What if, for instance, you were asked to undergo an fMRI (functional magnetic resonance imaging) scan to determine whether you were in fact in love with someone? Biological anthropologist Helen Fisher explores the human brain under the influence of love and makes a compelling case to suggest that brain science might be an important part of a full description of that most human of experiences. The implication is that we might find ourselves in a position where the biologists, reading a fMRI scan, could know many more things about us than we might care to admit.

Will someone reading your fMRI images know you better than yourself?

RESOURCES

You might like to build an activity around the discussion above using the following TED talks by Dr Helen Fisher:

- ✔ TED Talk: Why we love, why we cheat
- ✔ TED Talk 2008: The brain in love
- ✔ There are further resources available at Dr Helen Fisher's website.

SAMPLE RESPONSE TO A KNOWLEDGE QUESTION

What are the main difficulties that human scientists encounter when trying to provide explanations of human behaviour?

The main difficulties which human scientists face when constructing knowledge stem from their attempts to apply various elements of the scientific method in contexts which deal with human motives. Human beings are both part of and seemingly distinct from the 'natural' world around them. The most important difference is that human behaviour is commonly thought of as being explained through appeal to more than just natural physical laws. The behaviour of planets, electrons, digestive systems and weather fronts can all be fully described and explained through reference to basic physical laws. A full account and explanation of human behaviour, however, seems to require reference to the agent's own internal beliefs, motives and desires. Human scientists are attempting to make the same sort of 'law-like' claims as natural scientists, that is, they are trying to identify patterns in

human behaviour and identify the underlying causes through appeal to broad generalizations which are thought to apply in different contexts.

Applying the traditional 'scientific method' to human behaviour, however, runs into several difficulties. It is not clear that humans follow behavioural patterns in the same way that objects do. The actions of human beings tend to be quite circumstantial, that is, people behave the way they do because of a whole list of particular circumstances, none of which might ever occur again. This makes identifying patterns challenging.

One of the essential components for an explanation of human behaviour is reference to reasons, that is, beliefs, values and desires. The human sciences must attempt to make connections between behaviour and beliefs and desires otherwise they are simply describing what people do, not why they do it. However, there are two main assumptions at work here. Firstly, the human sciences need to assume that the beliefs and desires that are the root cause of the actions are themselves detectable – that someone can identify them – whether it be through the self-reporting of the person committing the action or the scientist investigating the action. Psychology and psychiatry often claim, however, that people are not terribly good at identifying the reasons for their own behaviour. Many forms of psychological therapy, for instance, are designed to give people the tools to uncover what really motivates them and correct for things they are unhappy with.

Secondly, we generally assume that people's reasons are, in fact, reasonable; making a cause-and-effect relationship requires us to identify motives that are properly related to that behaviour. Economists in particular will assume that individuals are rational agents and make decisions for reasons we can identify. This means that when they see people making decisions, in order to connect the decision to a reason, they must assume that the reasons are logically related. Of course, there can be many different reasons why people act the way they do, any one of which or any combination of which might have been the actual motivator. Economic theory says people make spending decisions based on principles like maximizing their ratio of reward to cost, but maybe we buy the most expensive phone simply because we want to look cool and to spite our parents who told us not to, motives that do not fit easily into economic theory.

In order to uncover people's internal mental states (desires and motives), psychologists need to perform experiments (a crucial step in the scientific method used to test hypotheses). These experiments, however, are notoriously difficult to get right. Again, people's responses are often not genuine, or they are affected by unknown and uncontrolled variables, or they might violate fair treatment concerns of the participants. Natural scientists, working with chemicals and non-conscious cells in laboratory environments, can control variables far more easily and not worry about the feelings of whatever's in the petri dish or popping out of the Large Hadron Collider.

If scientific knowledge is going to do anything it should at least give us the opportunity to exert some level of control over the world around us. We learn about the environment we live in, in order to put it to good use. Electricity, medicine, powered flight and pole vaulting are all possible because we have been able to harness various elements of the world around us. In order to do this, we need to be able to make clear, measurable and rigorous predictions which we can then use to navigate the world. Indeed, they might feel that they are more than 'predictions'; we might treat them as 'knowing the future beyond doubt' (imagine if it was only a prediction that the wings of the airplane would produce enough lift to hold the jet in the air – we wouldn't get on the flight!)

Human sciences, however, struggle to make substantive predictions about individual behaviour. We might, for instance, describe all the social, economic and academic factors in an individual IB student's profile and then we might identify other past IB students with similar profiles in order to find out how well students with that profile tend to do on their IB. However, this tells us nothing really about our individual student since our student will make their own choices. Economics might not fare any better: the global economic downturn of 2008 was predicted by some, but by and large it took the world by surprise and the constant updates on the status of the world's stock markets is a continual reminder that the whole thing is deeply unpredictable.

Do the results from standardized tests provide universities with enough data to predict whether a student will be successful?

Here again we have the subjective nature of the data posing a problem for traditional science and its methods. The emphasis on quantifiable, observational data in science seems to be inadequate when studying certain elements of human beings. In medical trials placebos are given to patients (unknowingly) so that researchers can identify the effects of genuine medicine (found in the population to whom the real medicine was given). But if patients are reporting that they feel better even when given a placebo, the data might be less useful.

LESSON PLAN: BUILDING A QUESTIONNAIRE

This lesson was developed in response to the local school's requirement that teachers provide students the opportunity to feed back on their experiences.

Introduction

This lesson is related to the activity in the student book (page 359) where TOK students studying the human sciences ('students') are asked to build their own questionnaires for the leaving IB2 students ('participants'). The lesson is designed to meet a very practical need – evaluating how the IB2 students have felt about their TOK course. It is also an excellent way of encouraging the IB1 students' reflection on the nature of qualitative data and its use in developing scientific knowledge.

The lesson will take more than one session, depending on how teachers manage the process and the access the students have to participants.

Getting feedback is a challenge in all cases, but more so when you are new and might not be confident, yet. Perhaps you could offer more guidance here in terms of what you need feedback on, so the questions prompt helpful responses.

The lesson is about gathering feedback from the IB2s, so teachers will want to take some care (and control) over which questions are actually presented to the IB2 participants. Teachers will need to have a level of self-confidence and thick skin proportional to the freedom they give to the students to manage the process. Some genuine control is needed as feedback is a good thing and teachers will want useful and honest feedback. Generally speaking, the IB1 students developing the questionnaires take the process seriously and manage to produce a useful questionnaire.

Framework section

Methods and tools

Aims

Students will:

Questionnaires can collect both types. For example, 'How many hours did you use to prepare your internal assessment?' results in quantifiable data, whereas 'Did you feel that the process of development adequately prepared you for the assessment?' will result in qualitative data.

- understand how quantitative and qualitative data can be captured through the use of questionnaires.
- reflect on the challenges of gathering useful quantitative data and whether it can be used to confirm or falsify a hypothesis in the human sciences.

Objectives

Students will be able to:

- research the challenges and solutions to developing useful questionnaires to gather both quantitative and qualitative data
- develop a questionnaire for the leaving IB students to gather information about their experiences as a TOK student
- manage the process by which the participants take the questionnaire
- gather and analyse the data
- report back on their findings.

The format in which the student feed their findings back are up to you. Perhaps they write a report, offer a presentation, a poster or just a discussion in class.

Knowledge questions from the TOK subject guide and the psychology subject guide

- Are observation and experimentation the only two ways in which human scientists produce knowledge? (The human sciences: methods and tools)
- To what extent are the methods used to gain knowledge in the human sciences 'scientific'? (The human sciences: methods and tools)

There are lots of different connections to the knowledge framework and the psychology subject guide. This supports the work your psychology colleagues are doing in Group 3. Perhaps you might enlist their support?

- How does the use of numbers, statistics, graphs and other quantitative instruments affect the way knowledge in the human sciences is valued? (The human sciences: methods and tools)
- Does a researcher's choice of methodology affect the reliability or credibility of research? (Psychology subject guide)
- Are the methods of the natural sciences applicable in the social sciences? (Psychology subject guide)

Relevant course concepts

Evidence, interpretation, objectivity

Prior learning

Students should have already developed an understanding of the scope of the human sciences and possibly the roles of qualitative and quantitative data in testing hypotheses. The lesson could be developed as a way for students to develop an understanding of the differences between these types of data.

Required resources

Access to the leaving IB TOK students.

If this activity has been run before, perhaps the students can critically evaluate the previous questionnaires?

Activities

1. Students research and discuss the difficulties in forming a questionnaire in the human sciences, including:
   a. the challenges of forming *good* questions
   b. the danger of leading or non-neutral questions
   c. the challenges of providing the right options for responses
2. The teacher explains that the school needs data on student attitudes towards their TOK experience. The idea is that this data will help teachers make decisions about how or whether to change the course in the future.
3. Depending on the number of students in both the TOK class and the number of student participants in IB2, divide the class into manageable groups. Different groups might have to give their questionnaire to different groups of participants in IB2.

Again, you might offer more guidance here to make sure that the questionnaires are useful.

4. Putting what they have learned about qualitative, quantitative data and the challenges of developing questionnaires, students then discuss and choose what their questionnaire is meant to achieve, the questions they will ask to achieve this, and the logistics of how the participants will take the questionnaire.
5. Students then develop the questionnaire and manage the process of getting the participants to take it. (This might be online, on paper, during lessons or after school.)
6. Students then collect and analyse the data and report back to the teacher.
   a. What do the data show in relation to the information being sought?
   b. Do the data show any trends?
7. Students should reflect on the process:
   a. What were the challenges they faced in terms of asking appropriate and well-formulated questions?
   b. What challenges did they find in terms of what responses were available to the participants?
   c. How did they overcome these challenges?
   d. How useful do they think the data are? Are the sample sizes large enough to identify trends? What other explanations might there be for the data that the questionnaire does not account for?