

## The Scientific Method

**A** 'Hypotheses,' put forward by Mayawati in 1964 were 'imaginative and inspiring', They are 'adventures of the mind' The Logic of Scientific Discovery (1972, 3rd ed.) He argued in support of the part taken by Karl Popper that the nature of the scientific method is hypothetico-deductive and not as inductive as is commonly believed.

**B** As a researcher, you need to comprehend the difference between these two descriptions of the research process. So, do not get tired or suffer from the feeling of 'cheating' or not going the proper way.

**C** The myth of the scientific method is that it is inductive and that the development of scientific theory begins with a simple, unbiased, Impartial observation, raw source senses. Generalizations develop in these sensory data, commonly referred to as 'facts'. The myth is that from a disorganized collection of real information an orderly, suitable theory will somehow appear. Yet, the starting point of the inductive is impossible.

**D** There is no such thing as impartial observation. Every action we observe is a function of what we have seen or experienced in the past. All scientific work of an experimental or research nature begins with certain expectations of the result. This expectation is a hypothesis. Hypotheses provide initiative and impetus for investigation and affect the methodology. In the light of an expectation, some observations are considered suitable and some are unrelated, one method is selected, the other is rejected, and some experiments are executed, while others are not. Where is your innocent, pure, and objective researcher now?

**E** Hypotheses arise by conjecture or inspiration, but they must be formalized and strictly tested using a suitable method. If the predictions you make as an outcome of finding some effect from your hypothesis are not shown to be right, discard or change your hypothesis. If the predictions are accurate, your hypothesis may be helped and kept until further tests show that they are incorrect. Once you have reached your hypothesis which is the product of your imagination, you go into a rigorous logical and strict method, 'hypothetico-deductive' based on the deductive argument.

**F** So, do not worry if you know what your outcomes will say before you start collecting data, there are no scientists waiting for all the evidence to be in front of them before they try to act what it might mean. We are always getting closer to this situation when something happens by accident, but, for instance, before confirming that it can prove to be a successful alternative to a fungal bacterial infection, the researcher should test a hypothesis.

**G** The myth of the scientific method is not only that it is induction (what we have seen is false), but that the hypothetico-deductive procedure continues in a gradual, unavoidable fashion. The hypothetico-deductive method explains a logical technique for most

research tasks but does not define the psychological behavior it brings. It is so complete that it includes speculation, rework, revisions, blind alleys, and above all motivation, which is instantly apparent from reading the last dissertation or published document. These are, more precisely, a series, logically arranged so that the value of the outcome can be assessed independently of the behavioral techniques from which it is derived. This is the difference between the academic documents that demonstrated the structure of the DNA molecule by Crick and Watson, and the captivating book, *The Double Helix*, by Watson (1968) explaining how they did it. From this point of view, the 'scientific method' can be considered as a way of implementing research, rather than as a way of writing it.

## The Scientific Method reading questions

### Questions (1 - 5)

Complete each sentence with the correct ending, **A–G**, below.

*Write the correct letter, A–G, as your answer to each question.*

1. Mayawati argued in support of the part taken by Karl Popper that the
2. Researcher needs to understand the difference between these two descriptions of
3. Do not suffer from the feeling of 'cheating' or
4. The development of scientific theory begins with a simple, unbiased, Impartial observation,
5. Every action we observe is a function of what we have seen or

- A. the research process
- B. as a way of writing it
- C. raw source senses
- D. not going the proper way
- E. nature of the scientific method
- F. test a hypothesis
- G. experienced in the past

## Questions (6 - 10)

Do the following statements agree with the information given in the Reading Passage?

Write

**TRUE** if the statement agrees with the information

**FALSE** if the statement contradicts the information

**NOT GIVEN** if there is no information on this

6. Hypotheses never provide initiative and impetus for investigation and affect the methodology.
7. Hypotheses arise by guess or motivation, but they must be standardized and rigorously tested using a proper method.
8. If the predictions are correct, your hypothesis may be aided and kept until further tests show that they are wrong.
9. Numerous people do research in the wrong way as well as using incorrect strategies.
10. You should worry if you know what your outcomes will say before you start collecting data.

## Questions (11 - 13)

*Choose the correct letter, A - D*

11. None of the scientists waited until all the evidence was in front of them before they
  - A. have a discussion
  - B. make a decision
  - C. try to act
  - D. put a plan
12. The hypothetico-deductive method explains a logical technique for most
  - A. research tasks
  - B. People
  - C. researchers
  - D. investigation procedures

13. The 'scientific method' can be considered as a way of implementing research, rather than as a way of

- A. processing it
- B. handling it
- C. reading it
- D. writing it

## The scientific method reading answers with explanations

Get **the scientific method IELTS reading answers** with clear explanations given below to compare and check your answers.

**(Note: The text in italics is from the reading passage and shows the location from where the answer is taken or inferred. The text in the regular font explains the answer in detail.)**

### *1. E. nature of the scientific method*

**Explanation: Paragraph 1** - *He argued in support of the part taken by Karl Popper that the nature of the scientific method is hypothetico-deductive and not as inductive as is commonly believed.*

### *2. A. the research process*

**Explanation: Paragraph 2** - *As a researcher, you need to comprehend the difference between these two descriptions of the research process.*

### *3. D. not going the proper way*

**Explanation: Paragraph 2** - *So, do not get tired or suffer from the feeling of 'cheating' or not going the proper way.*

### *4. C. raw source senses*

**Explanation: Paragraph 3** - *The myth of the scientific method is that it is inductive and that the development of scientific theory begins with a simple, unbiased, Impartial observation, raw source senses.*

5. G. *experienced in the past*

**Explanation: Paragraph 4** - *There is no such thing as impartial observation. Every action we observe is a function of what we have seen or experienced in the past.*

6. No

**Explanation: Paragraph 4** - *This expectation is a hypothesis. Hypotheses provide initiative and impetus for investigation and affect the methodology.*

7. Yes

**Explanation: Paragraph 5** - *Hypotheses arise by conjecture or inspiration, but they must be formalized and strictly tested using a suitable method.*

8. Yes

**Explanation: Paragraph 5** - *If the predictions are accurate, your hypothesis may be helped and kept until further tests show that they are incorrect.*

9. *Not Given*

**Explanation:** The particular statement is not mentioned in the reading passage by the writer.

10. No

**Explanation: Paragraph 6** - *So, do not worry if you know what your outcomes will say before you start collecting data, there are no scientists waiting for all the evidence to be in front of them before they try to act what it might mean.*

11. C. *try to act*

**Explanation: Paragraph 6** - *So, do not worry if you know what your outcomes will say before you start collecting data, there are no scientists waiting for all the evidence to be in front of them before they try to act what it might mean.*

12. A. *research tasks*

**Explanation: Paragraph 7** - *The hypothetico-deductive method explains a logical technique for most research tasks but does not define the psychological behavior it brings.*

13. D. *writing it*

**Explanation: Paragraph 7** - *From this point of view, the 'scientific method' can be considered as a way of implementing research, rather than as a way of writing it.*