The hypothetico-deductive method is an iterative process, meaning that the researcher may need to repeat the steps for several time to refine a hypothesis until the satisfactory explanation is found.

Ch # 02.

Hypothetico-Deductive method

The hypothetico-deductive method is a scientific approach to problem — solving that involves the formulation of hypothesis and testing of these hypothesis through experimentation and observation.

The hypothetico-deductive method is consist of following seven steps;

- Observation
- Preliminary information gathering
- Theory formulation
- Hypothesizing
- Data collection
- Data Analysis
- Interpretation of Data.

Observation:

This is the first step in hypothetico-deductive method at which the researcher makes observations of a phenomenon or problem that needs an

explanation. The observation can be made through various methods such as direct observation surveys and measurements.

For example a researcher observes that plants in a particular area are not growing well and there appears a problem with soil.

Preliminary information gathering:

After making observations the researcher gatheres the preliminary information about the phenomenon or problem. The information may include data from previous studies, information about the factors that could influence the phenomenon or background information that help and guide the researcher.

For example the researcher gatheres preliminary information

about that areas soil quality. the composition of the soil and the types of plants that grow in the area.

Theory formulation:

Based on preliminary information gathering the researcher formulates a theory or a general explanation for the phenomenon. It will provide a frame work for understanding the phenomenon.

Based on gathered information the researcher will formulate a theory that the soil's nutrient level is low and this causing the plant's poor growth.

Hypothesizing:

once the theory is formulated the researcher will formulates a specific testable statement called a hypothesis. The hypothesis predict the relationship between variables

and provide a way to test the theory. The hypothesis must be testable and falsifiable to be considered scientific.

For example the researcher will create hypothesis that "if the soils neutrients level increased then plant's growth will improved."

Data Collection:

The hypothesis is tested through data collection The researcher design an experiment or observation to collect data that will test the hypothesis. The collected data should be valid and reliable.

For example the researcher designs an experiment to test the hypothesis. The experiment involves adding various fertilizers to the soil and observing how plants grow overtime.

Data analysis:

The collected data is analyzed to determine if the hypothesis is supported by evidence. Statistical analysis is often used to test the significance of the data. For data analysis the researcher will looks for patterns, trends, or other relationship between variables;

Interpretation of data:

Based on the data analysis results, the researcher will interprate the data and draws conclusions about hypotheses.

- If the evidence support hypothesis researcher will accept it.
- If it is not supported by evidences the researcher may need to revise the hypothesis or conduct additional research.

For example if data shows that adding fertilizers improves plants growth then researcher accept the hypothesis.

Alternate approach