Scientific Method

Scientific Method

refers to a standardized set of techniques for building scientific knowledge, such as how to make valid observations, how to interpret results, and how to generalize those results.

Scientific Method

allows researchers to independently and impartially test preexisting theories and prior findings, and subject them to open debate, modifications, or enhancements.

Scientific Method (4 main characteristics)

➔*Logical:* Scientific inferences must be based on logical principles of reasoning.

➔*Confirmable:* Inferences derived must match with observed evidence.

➔*Repeatable:* Other scientists should be able to independently replicate or repeat a scientific study and obtain similar, if not identical, results.

➔*Scrutinizable:* The procedures used and the inferences derived must withstand critical scrutiny (peer review) by other scientists.

Types of Scientific Research

Depending on the purpose of research, scientific research projects can be grouped into three types:

➔ exploratory,
➔ descriptive,
➔ and explanatory.

Types of Scientific Research (Exploratory research)

is often conducted in new areas of inquiry, where the goals of the research are:

(1) to scope out the magnitude or extent of a particular phenomenon, problem, or behavior,
(2) to generate some initial ideas about that phenomenon;
(3) to test the feasibility of undertaking a more extensive study regarding that phenomenon.

Types of Scientific Research (Descriptive research)

is directed at making careful observations and detailed documentation of a phenomenon of interest.

(what, where, and when of a phenomenon)

Types of Scientific Research (Explanatory research)

seeks explanations of observed phenomena, problems, or behaviors.

(why and how of a phenomenon)