

Research Methods in SHS

Outline:

At the end of this lecture, you are going to learn:

1. What is meant by scientific research?
2. What are the main types of research?
3. What is a scientific method?
4. Why is it important to follow methods in scientific research?
5. What are the famous Popular Research Designs:
6. According to what, the researcher can choose his methods?

Introduction

SHS applies scientific methods to social inquiry on human beings and their life contents. SHS methodology starts with an assumption and is gradually filled by a series of observations and experiences. The scientific method applied to SHS, includes a variety of research approaches, tools, and techniques, for **collecting and analyzing qualitative or quantitative data**. These methods include laboratory experiments, field surveys, interviews, case research, focus groups, ethnographic research, action research, observation, etc.

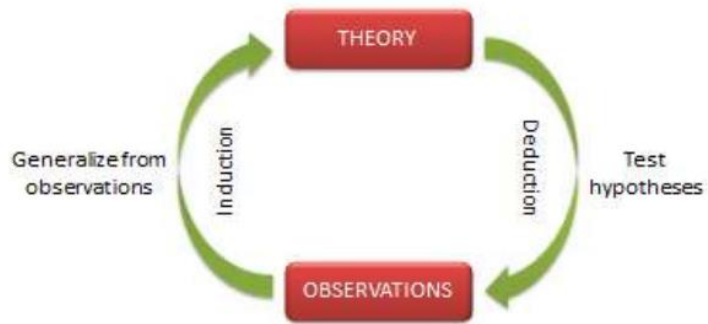
Scientific Research

Given that theories and observations are the two pillars of science, scientific research operates at two levels: a theoretical level and an empirical level. The theoretical level is concerned with developing abstract concepts about a natural or social phenomenon and relationships between those concepts (i.e., building “theories”), while the empirical level is concerned with testing the theoretical concepts and relationships to see how well they reflect our observations of reality, with the goal of ultimately building better theories.

Over time, a theory becomes more and more refined (i.e., fits the observed reality better), and the science gains maturity. Scientific research involves continually moving back and forth between theory and observations. Both theory and observations are essential components of scientific research.

For instance, relying solely on observations for making inferences and ignoring theory is not considered valid scientific research. Depending on a researcher’s training and interest, the scientific inquiry may take one of two possible forms: **inductive or deductive**.

In inductive research, the goal of a researcher is to infer theoretical concepts and patterns from observed data. In deductive research, the goal of the researcher is to test concepts and patterns known from theory using new empirical data. Hence, inductive research is also called theory-building research, and deductive research is theory-testing research. Note here that the goal of theory testing is not just to test a theory, but possibly to refine, improve, and extend it. It is important to understand that theory-building (inductive research) and theory testing (deductive research) are both critical for the advancement of science.



Scientific Method:

The 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. It allows researchers to independently and impartially test pre-existing theories and prior findings, and subject them to open debate, modifications, or enhancements.*

Using the scientific method regularly will teach you to look at all the evidence before making a statement of fact, which makes it an integral part of science education. If you want to be prepared for higher education science, you must be comfortable with this most fundamental process.

The importance of Scientific methods:

1. The scientific method teaches the brain to logically **examine and process all the information it receives.**
2. **It requires that one observes and tests before making a statement of fact. This is the main method scientists use when asking and answering questions.**
3. **It teaches the student to analyze and process the information he is receiving.**

The steps of the scientific method are:

1. Ask a question.
2. Make a hypothesis.
3. Test the hypothesis with an experiment.
4. Analyze the results of the experiment.
5. Draw a conclusion.
6. Communicate results.

The scientific method must satisfy four key characteristics:

1. **Logical:** Scientific inferences must be based on logical principles of reasoning.
2. **Confirmable:** Inferences derived must match with observed evidence.
3. **Repeatable:** Other scientists should be able to independently replicate or repeat a scientific study and obtain similar, if not identical, results.
4. **Scrutinizable:** The procedures used and the inferences derived must withstand critical scrutiny (peer review) by other scientists

Any branch of inquiry that does not allow the scientific method to test its basic laws or theories cannot be called “science.”

The scientific method includes a variety of research approaches, tools, and techniques, for collecting and analyzing qualitative or quantitative data. These methods include laboratory experiments, field surveys, case research, ethnographic research, action research, and so forth

Popular Research Designs:

Research designs can be classified into two categories – positivist and interpretive – depending on their goal in scientific research. Positivist designs are meant for theory testing, while interpretive designs are meant for theory building. Positivist designs seek generalized patterns based on an objective view of reality, while interpretive designs seek subjective interpretations of social phenomena from the perspectives of the subjects involved.

1. **Experimental studies:** are those that are intended to test cause-effect relationships (hypotheses) in a tightly controlled setting by separating the cause from the effect in time, administering the cause to one group of subjects (the “treatment group”) but not to another group (“control group”), and observing how the mean effects vary between subjects in these two groups.
2. **Field surveys** are non-experimental designs that do not control for or manipulate independent variables or treatments, but measure these variables and test their effects using statistical methods. Field surveys capture snapshots of practices, beliefs, or situations from a random sample of subjects in field settings through a survey questionnaire or less frequently, through a structured interview. The strengths of field surveys are their external validity (since data is collected in field settings), their ability to capture and control for a large number of variables, and their ability to study a problem from multiple perspectives or using multiple theories.
3. **Case research:** an in-depth investigation of a problem in one or more real-life settings (case sites) over an extended period of time. Data may be collected using a combination of interviews, personal observations, and internal or external documents. Case studies can be positivist in nature (for hypotheses testing) or interpretive (for theory building). The strength of this research method is its ability to discover a wide variety of social, cultural, and political factors potentially related to the phenomenon of interest that may not be known in advance.
4. **Focus group research** is a type of research that involves bringing in a small group of subjects (typically 6 to 10 people) at one location, and having them discuss a phenomenon of interest for a period of 1.5 to 2 hours. The discussion is moderated and led by a trained facilitator, who sets the agenda and poses an initial set of questions for participants, makes sure that the ideas and experiences of all participants are represented, and attempts to build a holistic understanding of the problem situation based on participants’ comments and experiences.
5. **Action research** assumes that complex social phenomena are best understood by introducing interventions or “actions” into those phenomena and observing the effects of those actions. In this method, the researcher is usually a consultant or an organizational member embedded within a social context such as an organization, who initiates an action such as new organizational procedures or new technologies, in response to a real problem such as declining profitability or operational bottlenecks.