

Concept and Need of Educational Research in Education

1. Research is pushing back the frontiers of ignorance
2. It uncovers the better ways of doing things
3. It uncovers the truth
4. There is no alternative to truth, therefore, to research

Level of Human Knowledge

5. Primary Level
 1. A teacher solves mathematical problem for students
 2. A doctor suggest some medicine for patients
6. Secondary Level
 1. Knowledge is employed to obtain increments in existing knowledge
 2. The activity which produces knowledge is called research
 3. It takes us beyond the Fortier of existing knowledge

Basic Questions about Research

- B. What is research?
- C. How is research used
- D. Different ways of doing research
- E. How do we do research?
- F. Tools to analyse research
- G. Important research terms

Formal Definition of Research

1. Research is the organised and systematic method of finding answers to questions.
 - a. Research is systematic because it is a process broken up into clear steps that lead to conclusions.
 - b. Research is organised because there is a planned structure or method used to reach the conclusion.

Logical and Scientific Thinking

A. *Why Nature of Knowledge*

1. Knowledge of nature knowledge will enable teachers to know what they are teaching and this knowledge will affect all their instructional purposes
2. Teacher only imparts his own view of the nature of knowledge
3. Teachers conception of what knowledge is influences not only what he teaches but also how he teaches

B. What is Science

1. It is a way of investigation
2. An established body of knowledge
3. It is a way of thinking
4. Science is a particular way of understanding the natural world.

Science is based on the assumption that our senses, can give us accurate information about the Universe.(
Visual (87.0 % Audio 7.0% Sniffing 3.5% Touch 1.5 %Taste 1.0%)

C. Empiricism

- (1) Observation is ultimate source of knowledge

- (2) Reason is connecting a fact with another fact
- (3) All knowledge begins with observation.
- (4) Theories are formulated deductively to explain the generalizations, and new evidence is required to confirm or disconfirm the theories.
- (5) Throughout the process, data are given precedence. Indeed, the entire process is viewed as essentially an inductive one.
- (6) Science in general and knowledge in particular are believed to occur in an upward fashion: from data to theory
- (7) Logical empiricism is characterized by the inductive statistical method.
- (8) Science begins with observation, and its theories are ultimately justified by the accumulation of further observations for conclusion.
- (9) The first is that observations are always subject to measurement error. The second, and perhaps more significant, problem concerns the theory dependence of observation.

Assumptions of science (Scientific Realism)

	Science	Religion
1.	The world exists	Allah Exists
2.	The world is real	Allah is real
3.	the world exists independently of its being perceived (classical realism),	Allah exists independently of its being perceived (classical realism),
4.	It has inherent error	It was error free
5.	It is a self correcting enterprise	It is corrected by following Laws of Allah.
6.	Natural phenomenon can be controlled by controlling their cause	Natural phenomenon can be controlled by controlling their cause by the will of Allah.
7.	The natural phenomenon are understandable	Allah made the natural phenomenon are understandable
8.	The natural phenomenon follow certain laws	The natural phenomenon follow laws of Allah
9.	The natural phenomenon are predictable	Allah made natural phenomenon predictable
10	There is cause and effect relationship in every phenomenon	Allah created cause and effect relationship in every phenomenon
11	It is impossible for science to understand the nature of God	Religion understands the nature of God
12	It is impossible for science to understand the nature of soul	Religion understands the nature of soul
13	the job of science is to develop genuine knowledge about the world, even though such knowledge will never be known with certainty (fallibilistic realism), and	Religion gives genuine knowledge about the world and hereafter
14	All knowledge claims must be critically evaluated and tested to determine the extent to which they do, or do not, truly represent or correspond to that world.	All knowledge claims must be critically evaluated and tested to determine the extent to which they do, or do not, truly represent or correspond to that Revealed knowledge.

IMPLICATIONS FOR EDUCATION

Observation is base of learning

Science should be taught as process not as a product

Science is a search for truth and knowledge

Processes of science

1. Observing
2. Classifying
3. Measuring
4. Hypothesizing or predicting
5. Describing
6. Inferring or making conclusions from data
7. Asking insightful questions about nature
8. Formulating problems
9. Designing investigations including experiments
10. Carrying out experiments
11. Constructing principles laws and theories from data

Sources of Knowledge

What is Research

- Research is pushing back the areas of ignorance by discovering new truths.
- To research is to get nearer to truth
- The activity that produces new knowledge is called research.
- The process by which it has been derived is replicable

Sources of knowledge

1. Sense perception

It is connected series of concepts which helps people to make sense out of chaotic environment and to function more effectively in it.

2. Tradition

- We refer traditions and customs to solve our problems
- In many activities and situations this ready reckoner serves very well.
- It largely determines our mode of facing problems and mode of making judgements

3. Authority

- The tribal chief remained the supreme authority for many centuries and his subjects considered him as all knowing and all competent superman. They looked to him for guidance and advice in their social, religious, economic, political and even private affairs.
- Religious scholars assume the role of authority. The followers turned to the religious leader for knowledge advice, explanation of phenomenon, domestic problems and medical treatment.
- The expert or scholar is a centre of authority to whom we look in times of crisis still.
- Authority is a valuable source of knowledge but it does have a major weakness.
- An authority whether a political figure, parents, religious leader of scholar can be wrong.

4. Expert Opinion

- Contacts and discussions with experts are also helpful to get knowledge.
- The participation of researchers in conferences, seminars, and workshops and listening to the learned experts are very helpful in getting knowledge and locating research problems.
- An effort must be made to find out whether the experts are recognized by other authorities in the field and whether they are in a position to know the facts about the particular problems under consideration.

5. Rationality (reasoning)

- Rationalism is a system by which knowledge is gained by reason and not by experiencing the world
- Rationalism regards human reason as the only reliable guide to knowledge
- Rationalists do not believe that it is necessary to verify knowledge either by faith or experience
- Finally rationality can provide a valuable means of knowledge

6. Magic

- Another way an individual can gain knowledge and control the world is through magic.

7. Scientific Method

- Science is based on the assumption that the universe is uniform and orderly and governed by cause and effect

Steps in Scientific Method

- Define the question
- Gather information and sources
- Form hypothesis
- Perform experiment and collect data
- Analyse data
- Interpret data and draw conclusions that serve as starting point for new hypothesis
- Publish results
- Retest (frequently done by other scientists)