

Research Methodology

DSE-II

Semester-IV

Definition of Research: We can say Research = Re + Search = Re + View

Now according to different Scholars or authors Research can be stated as,

According to the Merriam: (Webster online Dictionary). A studious inquiry or examination, especially; investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or law in the light of new facts or practical application of such new or revised theories or law.

Kerlinger (1873): Research is a systematic controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomena.

According to Payton (1979): Research is the process of looking for a specific question in an organized, objective, reliable way.

According to Waltz and Bansell (1981): Research is a systematic, formal, rigorous and precise process employed to gain solutions to problems or to discover and interpret new facts and relationships.

Longman Dictionary of contemporary English(1997): Research as a serious study of a subject that is intended to discover new facts or test ideas.

According to Kothari (2006): Research is a pursuit of truth with the help of study, observation, comparison and experiment, the search for knowledge through objective and systematic method of finding solutions to a problem.

General Characteristics of Research:

There is no single "correct" way of conducting research in the field of education.

Gary Anderson outlined ten aspects of educational research.

Educational research attempts to solve a problem.

Research involves gathering new data from primary or first-hand sources or using existing data for a new purpose.

Research is based upon observable experience or empirical evidence.

Research demands accurate observation and description.

Research generally employs carefully designed procedures and rigorous analysis.

Research emphasizes the development of generalizations, principles or theories that will help in understanding, prediction and/or control.

Research requires expertise—familiarity with the field; competence in methodology; technical skill in collecting and analyzing the data.

Research attempts to find an objective, unbiased solution to the problem and takes great pains to validate the procedures employed.

Research is a deliberate and unhurried activity which is directional but often refines the problem or questions as the research progresses.

Research is carefully recorded and reported to other persons interested in the problem.

The Steps of Research:

The steps of research can be written as follows,

Step I: Formulating a research problem

Reviewing the literature

Formulating a research problem

Identifying variables

Constructing hypothesis

Formulating research objectives

Step II: Conceptualizing a research design

Selecting a research design

Step III: Constructing an instrument for data collection

Selecting a method of data collection

Step IV: Selecting a sample

Selecting the right sampling type from the different types of

Sampling methods

Step V: Writing a research proposal

Writing a research proposal

Step VI: Collecting data

Data collection

Step VII: Processing data

Editing data

Coding data

Analyzing data

Displaying data

Step VIII: Writing a research report/research paper or thesis

Writing research report

And finally Referencing

Types of Research: Research can be segregated in different types .These are,

Major Types of Research

- ❖ **Descriptive Research**
- ❖ **Analytical Research**
- ❖ **Applied / Action Research**
- ❖ **Basic / Pure/ Fundamental Research**
- ❖ **Qualitative Research**
- ❖ **Quantitative Research**
- ❖ **Conceptual Research**
- ❖ **Non-Scientific Methods Descriptive Research**
- ❖ **Non-Scientific Methods Descriptive Research**
- ❖ **Other Types of Research**

Descriptive Research

- Surveys and fact finding enquiries of different kinds
 - Purpose is the description of the state of affairs as it exists in present • Ex Post Facto Research • Researcher has no control over the variables; he can only report what has happened or what is happening
- Subdivisions of Descriptive Research

Subdivisions of Descriptive Research

- Survey Research • The Case Study • Correlational Study • Comparative Study
 - In short descriptive research deals with everything that can be counted and studied, which has an impact of the lives of the people it deals with. • For example,
 - Finding the most frequent disease that affects the children of a town. The reader of the research will know what to do to prevent that disease thus, more people will live a healthy life.
- Analytical Research

Analytical Research

- Involves in-depth study and evaluation of available information in an attempt to explain complex phenomenon • The researcher has to use facts or information already available and analyze these to make a critical evaluation of the material .

Subdivisions of Analytical Research • Historical Research • Philosophical Research • Review • Research synthesis (meta analysis i.e. analysis of the review already published)

Applied / Action Research • Finding a solution to an immediate problem • Research aimed to find social or political trends that may affect a particular institution is an example of applied research • Subtypes – Marketing Research – Evaluation Research. Applied Research For example, applied researchers may investigate ways to: • Improve product sales and delivery • Treat or cure a specific disease • Improve the efficiency of employees • Improve the access and availability of media in specified remote areas of the country

Basic / Pure / Fundamental Research

• Concerned with generalizations and with the formulations of a theory • Natural phenomenon and mathematics are examples of basic research • Finding information that has a broad base of application • For example, Pure Research investigations probe for answers to questions such as: • How did the universe begin? • What are protons, neutrons, and electrons composed of? • How was the first computer of television made? • What is the specific genetic code of the fruit fly?

Qualitative Research

Qualitative research uses the data which is descriptive in nature. Tools that educational researchers use in collecting qualitative data include: observations, conducting interviews, conducting document analysis, and analyzing participant products such as journals, diaries, images or blogs.

Types of Qualitative Research

- ❖ Case study
- ❖ Ethnography
- ❖ Phenomenological research
- ❖ Narrative research
- ❖ Historical research

Quantitative Research

Quantitative research uses data that is numerical and is based on the assumption that the numbers will describe a single reality.[1] Statistics are often applied to find relationships between variables.

Types of Quantitative Research

- ❖ Descriptive survey research
- ❖ Experimental research
- ❖ Single-subject research
- ❖ Causal-comparative research
- ❖ Correlational research
- ❖ Meta-analysis

Mixed Methods (Pragmatic)

There also exists a new school of thought that these derivatives of the scientific method are far too reductionist in nature. Since educational research includes other disciplines such as psychology, sociology, anthropology, science, and philosophy and refers to work done in a wide variety of contexts it is proposed that researchers should use "multiple research approaches and theoretical constructs. This could mean using a combination of qualitative and quantitative methods as well as common methodology from the fields mentioned above. In social research this phenomenon is referred to as triangulation (social science). This idea is well summarized by the work of Barrow in his text *An introduction to philosophy of education*:

Since educational issues are of many different kinds and logical types, it is to be expected that quite different types of research should be brought into play on different occasions. The question therefore is not whether research into teaching should be conducted by means of quantitative measures (on some such grounds as that they are more 'objective') or qualitative measures (on some such grounds as that they are more 'insightful'), but what kind of research can sensibly be utilized to look into this particular aspect of teaching as opposed to that.

Types of Mixed Methods

- ❖ Action research
- ❖ Program evaluation

In analysis of mixed methods, the following ways might be used;

- ❖ Explanatory mixed method: starts with quantitative followed by qualitative data and results
- ❖ Exploratory mixed method: starts with qualitative followed by quantitative data and results

- ❖ Triangulation mixed method: all data and results are concurrently analysed
- ❖ **Conceptual / Experimental Research** • Related to some abstract idea or theory • To develop new concepts or to reinterpret existing ones • Attempt to establish cause and effect relationship.

Unscientific Methods of Problem Solving • Tenacity – Cling to certain beliefs despite lack of evidence – Superstitions; eg: Black cat brings bad luck • Intuition – Considered to be common sense / self evident; may be found to be false • Authority – Reference to authority – used as a source of knowledge.

Scientific Methods of Problem Solving

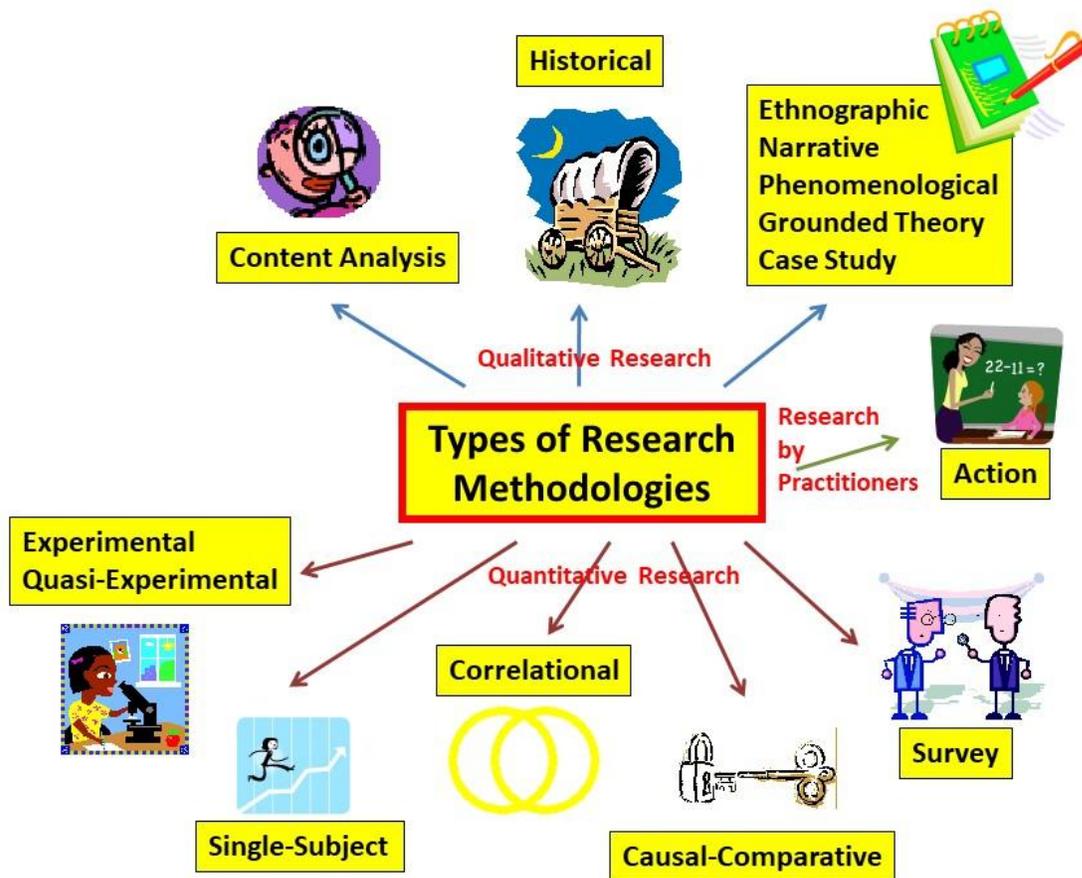
- The Rationalistic Method – Derive knowledge through reasoning – Basketball players are tall. Haresh is a basketball player. Therefore, Haresh is tall.
- The Empirical Method – Describes data or a study that is based on objective observation – Relies on observation or experience, capable of being verified by experiment

Ethnographic Research

- Ethnographic research refer to the investigation of a culture through an in-depth study of the members of the culture; it involves the systematic collection, description, and analysis of data for development of theories of cultural behaviour.
- It studies people, ethnic groups and other ethnic formations, their ethno genesis, composition, resettlement, social welfare characteristics, as well as their material and spiritual culture.
- Ethnographic Research** • Data collection is often done through participant observation, interviews, questionnaires, etc.
- The purpose of ethnographic research is to attempt to understand what is happening naturally in the setting and to interpret the data gathered to see what implications could be formed from the data.

Other Types of Research

- Based on Time – Cross – Sectional Research – Longitudinal Research •
- Based on Environment – Field Research – Laboratory Research • Clinical or Diagnostic Research • Case study or in-depth approaches
- Other Types of Research • Exploratory Research – Hypothesis development, rather than hypothesis testing • Formalized Research – Substantial structure and with specific hypothesis to be tested
- Other Types of Research • Historical Research – Utilize historical sources to study events of the past • Conclusion oriented – Picking a problem, redesign enquiry, conceptualize • Decision oriented – For the need for a decision maker, researcher cannot embark upon research his own inclination – e.g.: Operations Research



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