Types of Research

Sangita Bhattacharjee
Lecturer, Dept of Education
Nabadiganta college of education,Murshidabad,West Bengal

Abstract- *A research is a scientific and systematic process.It is done through a planned way.While doing a research ,a researcher has to decide about what type of research he is going to do .So before starting a research , it is very important to know about the types of research and the similarities and differences among them.This paper is about the types of research.It presents different types of research according to the approach, method ,logic and so on.Total twenty three types of research has been discussed here . This paper provides the characteristics and examples of various types of researches along with the differences among them .This will help in giving a clear idea about the types of research.*

Keywords- Types of research, fundamental, applied, quantitative, qualitative, cross-sectional, longitudinal.

I. INTRODUCTION

Research can be done in many ways.A research can be of many types on the basis of application, objective, process, logic, method, concept, and so on. These are discussed below-

On the basis of application, research is of two types –

1. Fundamental research
2. Applied research.

Fundamental or Pure Research-This is the basic type of research.It is also called pure and basic research.This research is done for getting new knowledge that is "Knowledge for knowledge's sake".The aim of this research is to invent new theory and to develop any existing theory.For this reason this study is also called theoretical research.Different procedures like sampling, hypothesizing etc are used in this research. Example-this type of research is often done in psychological laboratory.Research regarding human behaviour like Skiner's reinforcement theory,Bruner's teaching theory are examples of fundamental research.

Applied Research-This research checks the applicability of those principles created by fundamental research.This research utilizes those theories that are made by basic research to know the problems.It is done on the basis of fundamental research.Applied research tests the empirical content or basic assumptions.It solves specific problems of society . Survey,interview,observation,questionnaire etc might be used in this research.

Example-This research can be used in case of policy making,in the field of business or medicine.Checking the applicability of a medicine is the example of applied research. Applied research has sub divisions like action research , evaluation research.

a.Action Research-It is actually a kind of applied research. Whenever the researcher has to take an immediate action to solve an urgent problem ,that is called action research.The term was first coined by professor Kurt Lewin in 1944.It helps the researcher to develop practical solutions.Action research is done for practical problem solving as well as expanding scientific knowledge.It is participative as it involves the educators to improve their own practice.It is done by the teacher for the teacher.This research frequently uses case study.It uses feedback from data in a cyclic process.Action research cycle is given below:
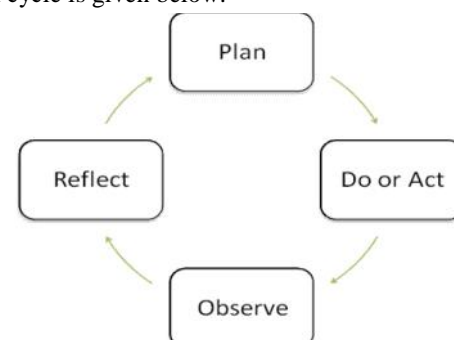
Example--Action research can be used in solving classroom management problems by the teachers.

b.Evaluation Research-This is a form of applied research.It is also known as programme evaluation.This research evaluates the performance of the developmental projects or any existing economic programme intending to have real world effect.It's aim is to evaluate the impact of social interventions like innovations in services,new treatment methods etc.Methods like survey,experiments can be used in evaluation research.

The differences between fundamental research and applied research are discussed below:

Fundamental Research	Applied Research
This research is done for theory formulation.	This research utilizes the principles made by fundamental research.
It is done for gaining new knowledge.	It is done for finding solution of a problem.
Its result can be generalized.	It's result can be applied to a specific group of people in a particular situation.
This research has flexible time scale.	This research has rigid time scale.
This research uses technical language.	This research uses common language.
It is theory oriented.	It is practical oriented.
It is knowledge specific.	It is solution driven.
Example research regarding human behaviour , some natural phenomenon etc.	Example research in the field of business ,medicine etc.

On the basis of logic research can be divided into two types – Inductive research

Deductive research
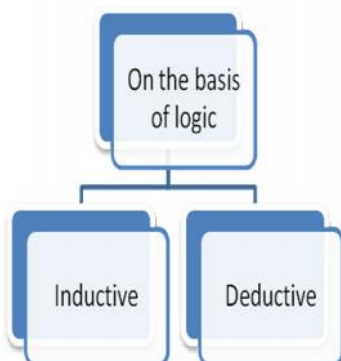
Inductive Research-This research begins by collecting relevant data.It moves from specific to general.It is based on

actual observation and it gives new knowledge Example-what do college students perceive as the solutions to homelessness?

Deductive research- It is totally opposite from inductive research.In this research hypothesis is developed from an existing theory.It starts with a theory and then tests it's implication.It moves from general to specific . It is a method of verification.

Example-does discrimination help to explain racial difference in depression?-The difference between Inductive and Deductive research are discussed below-

Inductive Research	Deductive Research
This is bottom-up approach.	This is top-down approach.
It moves from concrete to abstract.	It moves from abstract to concrete.
It goes from example to formula.	It goes from formula to example.
This research is suitable for beginners.	This research is used at higher level.
It is a time-consuming method.	It saves time.
It is not suitable for all topics.	It is suitable for all topics.
This is a method of discovery.	This is a method of verification.
The process is – Observation→Pattern→Hypothesis→Theory	Here the process is- Theory→Hypothesis→Observation→Confirmation

Process wise research is of two types-
Quantitative research and
Qualitative research.
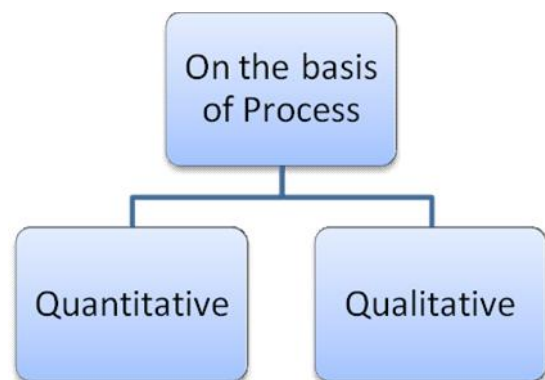
Quantitative Research-This type of research generally deals with quantity.It collects and converts data into numerical form and statistically calculates for conclusion.It is a systematic investigation of observed phenomenon through statistical, computational or mathematical technique. This is similar to deductive research.It is also called as linear research as it follows a linear path like-hypothesis data collection data analysis accepting or rejecting hypothesis.

Example-Reading difficulties of elementary students. Knowledge and practices towards Covid-19 among Indian students.These are the examples of quantitative research.

Qualitative Research-It is non numerical and concerned with quality.It is a process of naturalistic enquiry that aims at depth understanding of social phenomena in natural setting.It is inductive in nature that moves from specific to general.This research is done for holistic perspective , for the process and not for the product. This research is used in behavioural science.It uses projective techniques like word association test,story completion test etc.Grounded theory,narrative research,ethnography,mixed method designs are qualitative research.

Example-A research on the Bengali tradition and culture can be an example of qualitative research.

The differences between quantitative and qualitative research are discussed below-

Quantitative Research	Qualitative Research
It is based on quantification .	It is based on quality or kind of phenomena.
It tests hypothesis.	It generates hypothesis.
It is data based and focuses on measurement and test.	It uses observation and interpretation.
It is objective and popular approach.	It is subjective approach.
It uses large sample size.	It uses small sample size.
It uses numbers and statistics.	It uses projective techniques,indepth interview,observation etc.
It uses non random sampling method.	It uses random sampling method.
It uses statistical reports.	It uses narrative reports.

From the view point of objective research can be classified as-

Exploratory Research-As the name expresses it explores the research question.It does not intend to give any solution to an existing problem.It is generally done at the beginning of a research with an unfamiliar problem.Like a small scale study is done to decide if it is able to carry out detailed investigation. The purpose of this research is to develop hypothesis rather than testing.It tries to gain background information and to clarify problem.It uses experience survey,case study,interview,projective techniques etc.

Example-an assessment to improve the satisfaction of customers redarding a product.

Descriptive Research-This research describes the characteristics of an existing population or phenomenon .In other words it refers to the depiction of the characteristics of a particular individual,group,any existing fact and situation.It includes survey and fact finding enquiry.This research is used in social science and business .In case of human research,descriptive study can provide information about behaviour,health status,attitudes of a particular group.

Example-Ministry of education wants to know about the condition of school education during pandemic across different states in India.Descriptive research is similar with Ex-post-facto and it is also linked with analytical and historical research.

Analytical Research-It is a type of research which critically analyses facts and informations that are already available.It attempts to explain complex phenomenon by involving in depth study.It focuses on why.This research tests hypothesis and and interprets relationships by analyzing.From this research ,a researcher finds critical details to add new ideas to the material already made.Psychologists,doctors, students many time use this type of research to find relevant information.

Example-how can the disinterest in reading among secondary students be reduced ?

Historical Research-This research is like analytical research, it analyses past events.As the name implies , it deals with history.It utilizes historical sources like old documents to study the past events or ideas.It uses inductive data analysis like qualitative research for making realistic decision.This research explains a comprehensive picture of historical trends. Example-Progress of women education in India.

Explanatory or Causal Research-This research explains the cause-effect relationship,for this reason it is also called causal research.It finds the effect of one variable or thing on another variable or thing.It can employ statistical or experimental method.This research tries to answer how and why there is relationship between two variables.
Example-It might be used in business field. This research tries to answer the questions like- Why mental stress leads to heart diseases ?

Correlational Research-This research intends to establish relation between variables.It is a statistical study of relationship among varibles but it does not imply causation.It is non-experimental, researcher examines the strength of relationship in a natural setting without any intervention.There are three types of correlation-Positive,Negative and Zero correlation.

Example- relation between money and happiness.If money increases then happiness also increases,that means there is

positive correlation between money and happiness.But if the increasing of money decreases happiness,then there is negative correlation, and if happiness remains same after the increment of money that means there is zero correlation.
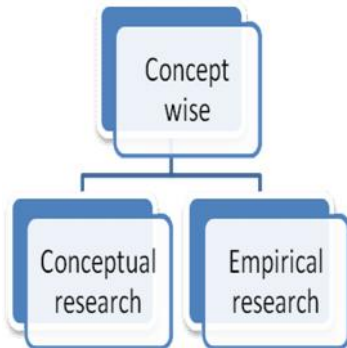

Conceptual Research-This research deals with ideas or concepts.Philosophers and thinkers use this research to develop new concepts.It is also used to reinterpret some existing theory.It is related to some abstract idea or theory and no practical experiment is involved here.

Example-Sir Issac Newton's theory of gravitation.

Empirical Research-This research relies on experience and observed phenomena.In this study ,conclusions are drawn from concretely empirical evidence.It uses both quantitative and qualitative technique.This is a data based research where the conclusion can be verified by experiment or observation.Example-Pharmaceutical companies uses this type of research.

There are two types of research from the view point of time taken in the study, these are-
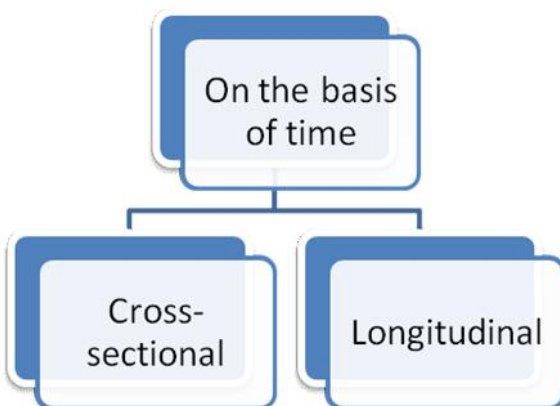
Cross-Sectional Research-This research allows the study of multiple variables at a single time.This research compares different population groups at a given time.Here the findings are drawn from whatever fits into the frame,it may not provide exact information about causal relationship.It does not consider what happened before or after,data is collected only once during the research process.This research records informations without manipulating the environment.

Example-relation between smart phones and students' scores in test.

Longitudinal Research-This is a long term research.It repeatedly draws sample units of a population over a long period of time.It observes changes in the individual that gives a better basis for causal inference.For the temporal sequencing,this research is a form of quasi-experimental design.Here the researcher tests same group of individuals repeatedly over an extended time period.This research can detect developments in the characteristics of target population at both group and individual level.For long term project, it can establish sequences of events.It is an in-depth research.It uses both quantitative and qualitative method.

Example-growing up in India, study of families etc.

The differences between cross sectional and longitudinal research are discussed below-

Cross-sectional Research	Longitudinal Research
This research is done at a single point in time.	This research is done over many years.
It is conducted with multiple samples.	It is conducted with the same sample.
It is time consuming process.	It is a time taking process.
It is less expensive than longitudinal study.	It is more expensive than cross sectional study.
It can not provide definite cause-effect relationship.	It can provide cause-effect relationship.
Here experiment is absent.	It is a form of quasi-experimental design.
It is able to study many variables at a given time.	It is a study of the same sample.

On the basis method ,research can be divided into Experimental, Survey and case study.
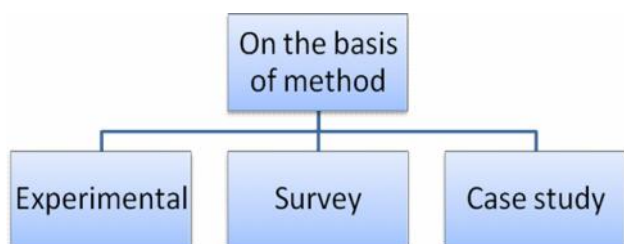
Experimental Research-This research identifies cause-effect relationship under controlled experiments. It is also called causal study. In this study independent variable is manipulated to see it's effect on dependent variable.

Example-Presently all the scientists of the world are examining different medicines on corona virus sample to see the effect of those medicines in curing the disease.

Survey Research-This is a fact finding study where the researcher collects data from a large number of people by using the methods of personal interviews, mailed questionnaire etc.It is quantitative in nature.

Example- A most well known example of survey research is the census of India.It is a survey method.

Case Study-This is an in-depth and comprehensive study of an individual, a group, a community, a situation, an institution etc. It begins with the identification of a case .Quantitative and qualitative data are used here .This study uses mixed method design. Historical research comes under this study.

Example-What are the effects of social media on elementary students? It can be an example of case study method.

Some other types of researches are-

Diagnostic Research-Actually 'Diagnosis' is a medical term for identifying patient's diseases from it's symptoms. It is like descriptive study having a different focus like foemative assessment. Individual's academic problem is measured by this research.It examines specific aspects of a subject specially the strengths and weaknesses and developes necessary remedies for future teaching. It is useful in self assessment.Trained professionals uses this study.

Prognosis Research-This is a scientific prediction for developing a disease and it's possible outcome.'Prognosis' is also a medical term that refers to an educated guess about

possible outcome of any kind of health related treatment.In simple words it is a prediction or guess of the outcome.

The differences between diagnosis and prognosis are discussed below-

Diagnosis	Prognosis
It tries to find out the causes of a problem.	It tries to guess the possible outcome.
It is only limited to school.	It is not limited .
Here the scope is narrow.	It has broader scope.
It identifies the cause of a problem.	It predicts the effects of the cause.
It moves from effect to cause	It goes from cause to effect.
Many formal and informal strategies are used here.	Many aptitude tests are used here.

All the researches have some distinct features,but they also have some common features . Although type wise every research is different but it can be said that a research is done for an unknown thing and it always give a new idea or new khowledge and in this sense all research is same.

REFERENCES

[1] Kaur, N. (2019). *Nta Ugc Net/Jrf/Set.* Invincible publishers.
[2] Kumar, & Gagan, M. (2019). *Trueman's Ugc Net/Set.* Danika publishing company.
[3] Philips. (2015). Journal of Poverty.
[4] S.Silvee, S. (n.d.). Types of Research. *Academia .*
[5] Taylor. (2002). Social Psychology Quarterly.
[6] aal.hku.hk>studyabroad>attachment
[7] ekurilka.ua>archive>index.php
[8] mocktime.com
[9] web.archive.org
[10] www.researchgate.net
[11] en.wikipedia.org