M.P.Ed. Sem-II (Paper-IV) Pradeep yadav

RESEARCH PROCESS

"The trouble with research is that it tells you what people were thinking about yesterday, not tomorrow. It's like driving a car using rear view mirror"

"To steal ideas from one person is plagiarism, to steal ideas from many is research."

INTRODUCTION TO RESEARCH:-

Today we have the atomic powered submarine that has sailed under the arctic polar cup. We have sputniks and satellites, system guided aircrafts and missiles, & spaceship is in prospect. Space officials envision establishing communities on the moon in the near future. Society today respects science & readily accepts its findings; but this was not always so.

Such as in survey type and historical research the findings are not always same.

MEANING OF RESEARCH:-

It's a process of carefull & systematic inquiry. Method of solving problems that uses defining & delimiting problem, forming a hypothesis, gathering data, analyzing data & interpreting the results.

WHAT IS RESEARCH?

1. Research may be called as careful inquiry or examination.
2. It is an experiment aimed at the discovery & interpretation of facts.
3. It is collection of information, a careful & systematic means of problem solving.
4. Research is to find out the truth behind anything under controlled conditions.

In physical education and sports for doing any research adequate resources both of faculty and facilities are required. Scientific studies in phy. Edu. have been conducted in institution of higher education since 1861. A number of phy. Education scientists have received grants from federal agencies, including the department of defence, National institutes of health etc.

Research is a planned and systematic study. Any accidental period isn't research, we have to give justification. **According to John W. Best** "Research is a formal, systematic and intensive process of caring on scientific method of analysis".

NATURE OF RESEARCH:-

The main feature of research is to determine (find out) how the things are as compared to. how things might be.

1. Research must be **systematic:** - The selection of subjects, selection of variables, experimental design, collection of data, evaluation of data, hypotheses etc. all should be planned & systematic.
   In research we don't prove our hypothesis but we have to interprete the results. Hypotheses help us in moving particular direction. It is an intelligent guess.

2. Research must be **logical:** - Examination of the procedures used in the research process allows researcher to evaluate the conclusions drawn. e.g. Relationship of speed with explosive strength. Relationship of endurance with long distance running.
3. **Empirical (Data based decisions):-** The researchers collects the data on which to base decisions. For this observations are required. Findings are based on observation.
4. **Reductive:-** In this we have to make it generalize then only findings will be same, it must not be specific to a particular type of situation. E.g. for measuring maximum fitness the fitness test of LNUPE, Gwalior is general. It should reach to conclusion. The researchers takes individual data/ events and uses them to establish general relationships.
5. Research must be **replicable:-** Replicable means which can be repeated. If we create similar situation the findings will be same. In this the research process is recorded, enabling others to test the findings by repeating the research or to build future research on previous result. But historical researches and survey researches are not replicable but the finding of experimental research is same always if it is conducted under similar situation.
6. Its aim is to find out the **cause and effect relationship.**

NEED & IMPORTANCE OF RESEARCH:-

1. Research economies efforts: - We must go for specific. I we want to improve endurance then we must go for long distance run , so we can get effective & economic results / findings.
2. It dignifies the work of a teacher.
3. It brings confidence to the teacher but the teacher must modify the generalize information so that they suit to his specific group.
4. It leads to adaptations of new methods.
5. Research brings a sense of awareness
6. Research help in the development & adaptation of new techniques.
7. It helps in the development of new gadgets.
8. Research is making efforts more specific.
9. Research helps in utilizing the fundamental or basic knowledge into specific situation.
10. It helps in better understanding of learning process.
11. Research promotes educational reforms.

12. It brings objectivity (means to the point or it is specific).

"Research may be defined as the systematic & objective analyses & recording of controlled observation that may lead to the development of generalization, principles or theories, resulting in prediction & possibly ultimate control of events"

[I] BASIC REASEARCH:- It is that type of research which may have limited direct application. It is also known as fundamental research or pure research. It is directed towards findings, the basic truth or knowledge behind the things. It is not concern with application of this knowledge but is only interested to give pool of knowledge. Basic research may be limited direct application but their researcher has control over the conditions. It usually deals with theoretical problems of the conceptual aspect. It normally uses the laboratory settings. It is usually carried on in laboratory situation where different types of facilities are available to carry out the experiments. The researcher might not be having any idea about the application of that knowledge but are interested in gathering the concepts about the area of his research work. It is concerned or focused with the development of new concepts. E.g. Use of solar energy, basic concepts about development of strength, development of new materials etc.

Points to Remember:-

1. Conducted in laboratory only.
2. Animals are used as a subjects.
3. Limited direct application.
4. More emphasis on control & accuracy.
5. Conducted in carefully controlled conditions.

Aim:- To discover the truth

[II] APPLIED REASEARCH:-Aim:- Testing the theory establish relationship.

It is concerned with the application of the body of knowledge given by basic research in the actual area. It is not interested in development of new aspects but is focused towards the application of already developed body of knowledge.

This type of research has direct value for practioners but the researcher has limited control over research setting. It is conducted for the purpose of applying or testing theory & evaluating its usefulness in solving educational problem. A researcher who asks," will application of multiple intelligence theory improve my students learning?" is seeking an answer to practical classroom question. The teacher isn't interested in building

3.	Utility	More sake of knowledge, less practical knowledge	Less sake of knowledge, more practical knowledge

TYPES OF RESEARCH: - Research is structural way of solving the problems. There are different kinds of problems in the study of physical activity; thus, different types of are used to solve these problems. The research is of four types, they are as follows:-

[I] Analytical Research: - It involves in depth study & evaluation of available information in an attempt to explain complex phenomenon (situation). The different types of analytical research are as follows:-

a) Historical Research:- It deals with the event which have already occurred or taken place. It focuses on events, organizations, institution & people. History is the systematic examination and explanation of change, or the lack of it, over time in human affairs (human movement and the body). Research is also needed on the history of health, leisure, public recreation, sports medicine and the use of drugs to enhance human physical performance.

The researchers are mostly interested in:-

1. Preserving of records of events & past accomplishments..
2. He attempts to discover :facts & to provide meaning & understanding of past events to explain the present state.
3. It helps to predict the future.

b) Philosophical Research: - Critical enquiry is its main characters. Researh establishes hypothesis, examines & analysis existive facts & synthesizes the evidence into workable theories model.

Philosophical research includes problems dealing with objectives of the subjects, development of curriculum, course contents, requirements, methodology. The philosophical approach uses scientific facts as the basis for formulating & testing the hypothesis.

"Having an opinion isn't the same as having a philosophy". In philosophical research the belief must be subjected to criticism in light of assumption.

c) Reviews: - Critical evaluation of research in a particular topic. It is critical evaluation of recent research. It involves analysis, evaluation & integration of the published literature often leading to conclusion.

d) Research Synthesis: - It is trying to make sense of the data collected on a large no. of participants by simply looking at the data. Research synthesis tries to determine common (understand) underline findings, (arrange) agreements or disagreements.

Glan & Gluss (1977) Mchaw & Smith (1981) proposed a quantitative means of analyzing the findings many studies called "Meta Analysis"

a general theory or even generalizing beyond his classroom. Letting teachers try out two method of covering study hall & then having them decide which one is results in greater student attentiveness is an example of applied research.

Example:- Preparation of sports material in sports such as fiber stick (Hockey) fiber pole vault, solar panel.

Points to be remember:-

1. **Not much emphasis given on control & accuracy.**
2. **Used for immediate application.**
3. **Practical in nature.**

According to Traver-"Applied research is taken upto solve the problems related to specific requirement in the field & knowledge is secondary"

It's purpose is to to improve/ develop a product or a process. It tests their theoretical concepts gained from the fundamental research in actual situation.

[III] ACTION RSEARCH :- Aim:- To solve a particular problem.

It is focused on immediate application emphasizing on a problem solving. "Here" & "Now". Its findings are to be evaluated in terms of local specific applicability rather than universal validity.

It is also called as "On the job research". It is similar to the applied research. Applied research involves a larger no. of sample as compare to action research.

According to Vest, "Action research is focused on immediate application not on the development of theory or upon general application.

Points to remember:-

1. **It is used to solve specific problem.**
2. **Results can't be generalized.**
3. **Internal and external validity or research is poor.**
4. **Also known as informal researcher.**

DIFFERENCE BETWEEN BASIC & APLLIED RESEARCH

S. No.	Basis	Basic Research	Applied Research
1.	Emphasis	More on control & accuracy	Less
2.	Degree	High degree of accuracy	Less

UNIT-II

SURVEY OF RELATED LITERATURE:-

Need for surveying the literature:-

1. To find out whether a study similar nature has already been completed.
2. To find out whether similar type of study is in progress.
3. To find out reaesearch allide to the problem. (Allide means something which is not main but closer to the main)
4. The literature helps in to provide ideas explaination or hypothesis which are helpful in understanding & formulating a problem.
5. It help us to identify the prodcedure & statistical application for the research work.
6. To find out the useful material which may helpful interpreting the results.
7. To understand the significance of research.
8. The literature may help as a supporting document while writing the research report.

KINDS OF RELATED LITRERATURE

a) Critical Literature:- The studies which are directly related to the topic under investigation & thus are very important to the subject comes under critical literature. These studies must be sighted as reviews.

b) Allied Literature:- The studies which are related to the investigation but are more peripheral than central. This may be used in the absence of the critical literature.

c) Primary Resources:- It is the direct description of the study by the individual who actually observes or witnesses or is the participants of an event is primary resources. It has more value in the research. e.g. News channels. The following may be used as a primary sources:-

d) Official records, minutes of the meetings, report of committees, annual reports, budget, honors & awards, attendance records.

e) Personal records:- Letters, diaries, lectures notes, drafts of speeches, articles etc.

f) Oral Statements (Recorded forms)

g) Pictorial Records (drawings, photos, movies etc)

h) Published materials , syllabus or course of action, news papers acoounts, books, magazines etc.

i) Physical remains or relics, apparatus, buildings, equipments etc.

j) Printed materials (Certificates, report cards, contracts)

k) Mechanical Records (Computer phlopy. C.D.s, Tape recorder , vedios record of interviews, pen drive)

l) Secondary Resources:- These sources which get the information from the primary resources. Its value is less than primary resources because there are manipulation takes place. It includes publications written by an author was not a direct a observation or participaent in the event describe. These are the sources of information in which the author evaluates the previous research work and gives his observations. These sources provides the information which are not available through the primary resources. E.g. public and official document, journals, maggenes, news paper and the published data e.g. the portion of the book, that describes the result of experiment that author himself has carried out may be treated as primary source and the other portion of book that describes the result of experiment conducted by others may be thought as secondary source.

Library Reading:-

The researcher should be fully aware about of ways / methods to proceed for the most efficient use of the library. Library reading help or suggests the researcher in going through the library sources in a systematic way. The sources should be examined for the contents and bibliography to find out additional sources or references. It is essential that researcher worker must know how

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to locate and to use what is available without such a skill, his is simply a hunter lost in the forest. Proficiency in the use of library or in the review of the literature consists of:-

i. The ability to locate sources directly
ii. To browse through multiple sources ~~tickly~~ quickly
iii. To cull relevant material
iv. To organize what has been accumulated
v. To interpret it.

Note Keeping:- A carefull & systematic way of note –keeping enables us to assimilate must of what is read or heard we take notes from speeches & lectures, class room discussion, conversation & reading references materials . Reading notes may be classified under four main categories:-

i. Quotation
ii. Summary
iii. Paragraph
iv. Evaluation

Criteria considered important for good note- keeping:-

i. Convenience or case of handling
ii. Flexibility
iii. Uniformity
iv. Accuracy of the data
v. Ease of assembling

Steps in Library Reading or Literature Research

There are six steps you should follow when reviewing the literature. These steps ensure thoroughness & make the search more productive. The steps are as follows:-

STEP –I: Write the problem statement:- First of all a researcher must know what he want to search & all must be note down. By carefully defining the research problem, the researcher can keep the literature search within reasonable limits.

STEP-II: Consult Secondary Sources:- In secondary sources we can get primary resources. So a researcher must go through thesis, dissertation, journals etc. This step helps to gain an overview of topic, but it can be omitted if researcher is knowledgeable about the topic. Secondary sources are helpful when student or researcher have very limited knowledge about the topic & can profit from background information & a summary of previous research. A review paper on the topic of interest is especially valuable.

a. Encyclopedias:- It helps for getting the overview of information both general & specialize nature. General encyclopedias provide broad information about an entire field. Specialized encyclopedias offer much narrower topics.
b. Research Reviews:- Reviews are always secondary in nature. These are repetitive in nature because in these the research which already completed previously again researcher can do research on it.
c. STEP-III:- Describe the discriptors:- Discriptors a re terms that help to locate sources relating to a topic/ problem. Discriptors can be classified as major & minor. It is the combination of discriptors that helps the researcher pinpoint pertinent related literature.
d. STEP-IV:- Search Preliminary Sources:- Use preliminary (general) sources via computer aided searches. Preliminary sources that are helpful to researches in phy. Edu, exercise science & sports science. The preliminary sources consists the following:-
    i. Abstracts:- Concise summaries of research studies are valuable sources of information. Abstracts of papers presented at research meetings. Abstracts we can also get from dissertations. Abstract international.

ii. Index:- Several indexes provides references to magazines & journals articles concerning specific topics. Some journals indexes commonly used in phy. Edu, exercise science & sports science.

iii. Working Bibliography:- Bibliography list books & articles about specific topics. They come in many forms depending on how the information is listed. All contain the authors titles of books or articles, journals names, & publishing information.

iv. The Library Information System:- The traditional card catalog with little trays of cards containing bibliographic information by author & subject has all but disappeared. Nearly all university libraries have gone to computerized catalog system.

v. Computer Searches:- Computer service facilities greatly expendite the literature search. Automated searching provides more effective & efficient access to indexes & information does manual searching.

vi. Reaching the primary sources through other (means personal contents with the experts etc).

STEP-V:- Read & Record the Literature:- Collecting related literature is a major understanding, but the next step is even more time consuming. You must read, understand & record the relevant information from the literature, keeping in mind one of the many. Murphy 's Law: "No matter how many years you save an item, you will never need it until after you have thrown it away".

As a researches, you should note the following information from research studies that you read:-

- Statement of the problem (& may be hypothesis)
- Characteristics of the participants
- Instruments & tests used (including reliability & validity information if provided)
- Testing procedures
- Independent & dependent variables
- Treatments applied to participants (if an experimental study)
- Design & statistical analyses
- Finding
- Questions raised for further study
- Limitations to other relevant studies not located.

STEP-VI:- Write the Literature Review:- After you have located & read the necessary information & have recorded the appropriate bibliographic data, you are ready to begin to write the literature review. The literature review has three basic parts:-

a. Introduction
b. Body
c. Summary & Conclusions

The introduction should explain the purpose of the review & the how & why of its organizations. The body of the review should be organized around important topics. Finally the review should summarize important implications & suggests directions for future research.

HISTORICAL RESEARCH

Meaning & Definition:- History is not only the superficial study of the past but it tells us about the events, the time, impact of those events & interrelationship between the persons. It means that history is not a story only. It is the study which tells us about the effect of that particular event.

"The process which involves investigating, recording, analysing & interpreting the events of the past for the purpose of discovering generalizations that are helpful in understanding the past & the present & to a limited extent, in anticipating the future".- JOHN W. BEST & JAMES V. KAHN

" Historical research uses the understanding of the past and try to understood the present inlight of past events & developments."- Clark & Clark

Historical research helps us to know about the past & tries to understand the present in light of the previous events & developments. Historical research might be about an idea, individual, a movement or an institution. In historical research, it is only the event which is to be understood but the interaction of various aspects is important.

- Historical research includes the delimitations of the problem, formulating the hypothesis which is to be tested or uestions to be answered, gathering & analyzing data & arriving at probability type conclusions or generalizations based on reasoning. In this we cant again recreat the situation. We can not repeat the research. In all findings reasoning is there, some scientific facts helps us to reach the result but ultimately we have to give reasoning for what particular findings. The research include collection of every type of data which comes on the way. Historical research is not based upon experimentation, but upon the reports of observations which can not be repeated. The historians handle data on the past events in the form of various types of documents, records, relics, articrafts having a direct or indirect impact on the event under the study.

HISTORICAL EVIDENCES

- Historical evidences or historical criticism which implies the process of appraisal which is used to derive usable & trustworthy data from a mass of historical data which is based on the conscious or unconscious testimony of others. The sources are as follows:-

Primary Sources (Already described earlier)

Secondary sources (Already described earlier)

EVALUATION OF HISTORICAL DATA/VALIDITY OF HISTORICAL DATA/ HISTORICAL CRITICISM

The validity of historical data can not be taken for granted by the historians. The data must be carefully analysed to differentiate between the true data & misleading or irrelevant data. The true & usable data in historical research are known as historical evidence. This evidence are the body of validated facts & information's which can be accepted as trustworthy as a proper basis for testing & interpreting a hypotheses. The data must be evaluated properly by applying two types of criticism:- **(a) Internal criticism (b) External Criticism.**

INTERNAL CRITICISM:- **It is concerned with the meaning & accuracy of the documents. Internal criticism evaluates the trustworthiness of its contents through the following questions:-**

a) Is the meaning of the words the same?
b) Is the author writing seriously?
c) Is the author expressing his/her real beliefs?
d) How soon after the events was the document written?
e) Was the author biased in any way?
f) Are the written sources evaluated with an understanding of time & conditions under which they were produced?

EXTERNAL CRITICISM:- It establishes the authenticity of the geniuses of the sources i.e. whether a given document is really a source of evidence about the past through carbon dating. It helps to determine whether a given source is genuine & admissible as evidence. e.g. Signature, handwriting, language. The following questions may help in external criticism:-

1. Who is the author? Sometimes the true name of author is not given. A author can also be a group or community.
2. Was the document written by a ghost (the one who writes for or in the name of another name) writer or by any other person.
3. What were the qualifications of the author in the concern area?
4. Is a particular item or equipment, piece of apparatus, costume etc. authentic.

UNIT-III

SURVEY STUDIES

Survey is a technique of descriptive research that seeks to determine present practices or opinions of a specified population; can take the form of a questionnaire, interview or normative survey.

According to Webster Dictionary- "A survey is a critical inspection to provide exact information".

According to C.A. Maser- "Survey have their usefulness both in leading to the formulation of hypothesis and at a more advanced stage in putting them to the test. Their function in a given research depends on how much is already known about the subject and on the purpose for which information is required"

Survey are usually descriptive in nature. It indicates the current status of a particular thing & so are relevant for comparative purposes or have historical significance. In survey studies the researcher does not manipulate the variables or arrange for the events to happen and the events which are observed would have happened even without any survey.

The survey is not only gathering & tabulating data but it involve a problem & objectives. It requires expert planning analysis & interpretation of data along with logical reporting of the finding. Survey is actually a status study.

PURPOSE OF SURVEY:-

1. It determine the present trend and status of a given situation and may also give recommendations on the basis of the findings.
2. Survey provide basis for decisions regarding changes leading to improvements.
3. It suggests the course, the path for future developments.
4. Survey of human beings gives knowledge about their behaviour under different conditions.
5. It helps in planning various programmes & problem solving.

TOOLS OF SURVEY:-

- Questionnaire
- Interview
- Test and Measurements

By these tools we do survey research. The questionnaire and the interview technique are essentially the same except for the method of questioning. Questionnaire are usually answered in writing, whereas interviews are orally conducted orally. The procedures for developing questionnaire and interview are similar.

Questionnaire: - Questionnaire is a type of paper and pencil survey. It is Used in descriptive research in which information is obtained by asking participants to respond to questions rather than by observing their behaviour.

It helps to obtain information from a large sample on variety of topics. It is used in those cases where information's can not be gathered by using other methods .(It is not the first choice but it covers more area)

To get accurate and valid responses the questionnaire should be prepared very carefully & used occasionally (The wording of the questionnaire should be understandable)

TYPES OF QUESTIONNAIRE:-

1. Close form / Restricted Type
2. Open form / Unrestricted Type

Close form / Restricted Type

These are those type of questionnaires which requires a specific response & that often takes the form of rankings, scaled items or categorical responses.

(A)Rankings:- Type of closed questions that forces the respondent to place responses in a rank order according to some criteria. e.g.:- Rank the following activities with regard to

how you like to spend leisure time. Use numbers I-5, with I being the most preferred and 5 the least preferred.- reading, watching T.V., Arts and crafts, sports (any), walking.

(B)Scaled items:- Type of closed questions that requires participants to indicate the strength of their agreement or disagreement with some statement or the relative frequency of some behavior. E.g. In a required physical education program, students should be required to take at least one dance class. Strongly agree, Agree, Undecided, Disagree, Strongly Disagree.

- Different responses words can be used such as- excellent, good, fair, poor and very poor.
- Very important, important, not very important and of no importance.
- Rarely, some, Often, Frequently.

(C) Categorical responses:- Type of closed questions that offers the participant only two responses, such as yes and no or agree and disagree,

Open form / Unrestricted Type :- These are those type of questionnaire that allow participant considerable latitude (freedom/ scope/ liberty) to express feelings & to expand on ideas.

These, call for free responses in the respondents own words & variety of information's can be gathered through such type of questionnaires.

Questions like" How do you like your job?" or "What aspects of your job do you like?" may be the easiest for the investigator to write. But these are not easy to conclude.

Characteristics of Good questionnaire:-

1. It deals with Significant topics.
2. Only those information's are gathered through questionnaire which are not available through other sources.
3. It should be as short as possible.
4. It should be attractive in nature.
5. The directions for the reply should be clear and complete.
6. The degree of difficulty should be from simple to complex.
7. The evaluation should be easy.
8. The tabulation should be easy.

CONSTRUCTION OF QUESTIONNAIRE:- While constructing a questionnaire some limitation are faced and those should be carefully analysed. The accuracy of responses is a crucial factor. Sometimes a person is biased in his replies & sometimes he might be unaware about the facts. In both these cases the accuracy will be affected. There might be sometimes a tendency of self-defence on controversial issues. They should be taken as limitations and also carefully analysed.

Suggestions for getting good response:-

1. The purpose of the survey should be clearly identified & stated.
2. The investigator should outline the field of study.
3. The questions should be arranged in a logical order.
4. Pictures or diagrams along with the questions may be helpful in getting proper responses.
5. The meaning of the terms in relation to the questions should be defined.
6. Avoid questions with double implications.
7. Questions leading to a particular direction/ answer should be avoided (biased questions should not be there)
8. Double negatives should be avoided.

Characteristics of an Interview technique:-

- It may obtain confidential information's.
- On the spot follow up questions may be asked.
- There is a scope for clarification & interpretations of the questions & so the required responses may be obtained.

- It sometimes permit follow up leads which can help in getting additional information
- An experienced investigator may get an idea about the accuracy of reply. Sometimes the accuracy of reply may be affected by self interest.
- The investigator develops repo with respondents which will help in getting better responses.
- The responses should be classified as in case of a questionnaire. The investigator should not strict as much as possible during the interview. Recording of interview may also be helpful after getting the consent of subject.

QUESTIONNAIRE DEVELOPMENT:-

1. INITIAL WRITING
2. TRIAL RUN
3. TABULATION
4. REWRITING 5. final Application

- THE NORMATIVE SURVEY:- Normative surveys are value judgments on the basis of norms. These norms may be pre-established norms or prepared norms for the specific purposes only. Normative survey is a method that involves establishing norms for abilities, performances, beliefs & attitudes.
- Normative survey uses an established test to judge the status of given population & sample in relation to already existing norms.
- In normative survey a cross sectional approach is used : samples of people of different ages, sexes & other classifications are selected & measured. The steps in the normative survey are generally the same as in the questionnaire, the difference being the manner in which the data are collected. Rather than asking questions, the researcher selects the most appropriate test to measure the desired performances or abilities such as the components of physical fitness.
- In any normative survey, it is important that the test be administered in a rigidly standardized manner. Deviations in the way measurements are taken, give meaningless results. The researcher collects & analyzes the data from the survey by some method, such as percentiles, T-score, & then constructs norms for the different categories of age, sex & so on.

FACTORS AFFECTING NORMATIVE SURVEY:-

1. **TESTING METHOD:** - Similar way of performing movements are to be used as were used during the formation of norms. All the instructions must also be followed which have been described in the standard test. Most important thing is individual while preceding he /she should follow the norms. E.g. Type of chin up, push up, pull ups etc.
2. **TESTER'S COMPETENCE IN MEASURING THE PERFORMANCE:** - It's mean that how much the tester is expert in relation to measuring the performance.
3. **ACCURACY OF INSTRUMENT:-** The instrument must be have consistency means if the instrument is showing accurate measurement & similar only then it must be used. If the accuracy or consistency is not there then the findings of the study will affect. E.g. stop watch, weight machine, measuring tape etc.
4. **SUBJECT MOTIVATION:** - Some type of motivation should be given to the performer of subject while an individual participate in a competition, he /she is already motivated. In relation to a test, there must be enough motivation given to subject and it must also kept in mind that the motivation should be given as per the described instruction in the standard test.
5. **EXTERNAL CONDITIONS:** - Surface, weather conditions, temperature, humidity, altitude etc.
6. **OTHER FACTORS:** - There are also some other factors which should also kept in mind such as hunger, time of testing, mental condition and physical condition.

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CASE STUDY

Meaning:- Case study examines a social unit as a whole for the purpose of observing specific characteristics in that particular unit. E.g. a person of a family, a community, a team or an institution etc. The purpose of case study is to understand the life cycle or an important part of the life cycle as a unit. It analysis interaction between the factors which explain the present status or the conditions which bring change or have influenced the growth in the case. It is a longitudinal approach.

The case study is a form of descriptive research. It gathers a large amount of information about one or few participants. It is a detailed examination of single case.

Definition:-

According to P.V.Young:- "Case study is a method of exploring and analyzing the life of a social unit, be that a person, a family, an institution, cultural group or even entire community"

According to Goode & Hatt:- "Case study is a way of organizing social data so as to preserve the unitary character of the social object being studied. Expressed somewhat differently, it is an approach which views any social unit as a whole"

The case study may be employed in the following areas:-

1. To conduct intensive studies of individuals within a defined group:- This is the most important objective of the case study procedure. The number of subject depend upon a number of factors; conceivable, a small number might be studied if the data gathered were extensive & uite uniue.
2. To attempt to generalize from a synthesis of the individual in the group:- The ultimate aim of most research is to draw generalization from an examination of members of a particular population.
3. To conduct groups (To differentiate between group):- The objective of much experimental research is to construct group on various triats: a similar possibility exists with case study.

METHODS FOR COLLECTING INFORMATION IN CASE STUDY:-

The following methods may be used for collecting information in case studies:-

1. Observational Method:- Observation of physical characteristics, social qualities or behavior i.e. normal living condition or natural environment.
2. Interview Method:- Interview from the subjects, his/her relatives, friends etc.
3. Questionnaire Method:- It includes opinionaire or psychological tests etc.
4. Recording of Data/ Recorded data:- The researcher can collect the information from recorded data such as newspaper, school records, service records etc.

CHARACTERISTICS OF CASE STUDY:-

1. Case study should be based on adequate & complete data.
2. The data must be valid
3. There should be continuity in data:- The data must be trunketed. The aspect must not be left/ missed.
4. The data should be scientifically prepared.
5. Data must be kept confidential.
6. Follow up work must be taken up to re-establish the fact of information or fill up the bridge left between.

OBJECTIVES OF CASE STUDY:-

1. Case study helps in investigation.
2. It helps to find out the generation characteristics of an area.
3. It may be used for studying the causes of problem area.
4. It may helps in solving the problems of sports persons, teacher – student etc.
5. It may be used in the investigation of gifted people.
6. To find out the factors responsible for success and failure of group.

ADVANTAGES OF CASE STUDY:-

1. It helps the researcher to have a clear insight into the life of the case directly its real springs of behavior.
2. It is an important medium of tracing out the natural history of the social unit under study.
3. Intensive & extensive study of the case is possibly only through this technique.
4. It helps to achieve certain therapeutic & administrative purposes. Behavioral & management problems can be solved through them.
5. In social research studies, this is perhaps the best technique of gathering generalized knowledge.
6. It also suggests measures to be taken for the improvement of the unit.

STEPS IN COLLECTION OF DATA IN CASE STUDY:-

1. Selection of case or cases
2. To find out the initial status.
3. Formulation of hypothesis
4. Collection of data
5. Identification of main features
6. Study of developmental stages
7. Follow – up steps.

TYPES OF CASE STUDY:-

1. Cross Sectional case study (Individual, Group)
2. Longitudinal Case study (Individual, Group)

(A) Cross Sectional case study (Individual, Group):- It is a study which carried upon a specific time period. They have to find out the status as it is at a particular time period for the individual & group under investigation. They are useful to know the present status of case but are not sufficient to know about the developmental aspects & hence it is difficult to predict about the future of case also. It is helpful for grading or ranking of case in comparison to other cases.

(B) Longitudinal Case study (Individual, Group):- It is a study which is done alongwith the passing time phase & the case is studied in a longitudinal time frame. i.e. the individual case is picked up & the data are collected at different period. It is helpful to show developmental pattern of a case in different phases of time. They help in the prediction about a particular case on the basis of its past performances.

CLASSIFICATION OF CASE STUDY:- Case study research is similar to other forms of research. It involves the identification of the problem, the collection of data, and the analysis & reporting of results. As in other research techniques the approach and the analysis depend upon the nature of the research problem. Case studies can be of following types:-

1. DESCRIPTIVE STUDIES:- A descriptive case study presents a detailed picture of the phenomena but does not attempt to test or build theoretical models. Sometimes, descriptive case studies are historical in nature, & sometimes they are done for the purpose of achieving a better understanding of the status. Descriptive case studies frequently serve as an initial step or data base for subsequent comparative research & theory building.
2. INTERPRETIVE STUDIES:- These studies attempt to interpret about the facts which have been gathered under descriptive studies, e.g. a researcher might use the case study approach to better understand the cognitive process involved in sports.
3. EVALUATIVE STUDIES:- Evaluative case studies also involve descriptive & interpretation, but the primary purpose is to use the data to evaluate the merit of some practice, programme, movement or event. The efficiency of this type of case study relies on the competence of the researcher to use the available information to make judgments.

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PHILOSOPHICAL RESEARCH: - Philosophy is a discipline comprising logic, aesthetic & ethics (certain rules, laws). It works in search of wisdom (knowledge /understanding/ intelligence), a search for general understanding of values & reality through thinking. It is a study of processes which governs / controls thought & conduct, or the principles or laws which underlie all knowledge & reality.

The aim & objective of different fields, curriculum construction, development of tactical plan, solution of leaning problem (skill, theoretical) etc are all based upon critical thinking.

NATURE OF PHILOSOPHICAL RESEARCH:- Philosophical research is not scientific in nature but it helps in problem solving. It is basically subjective and works through analytical thinking. It goes beyond the area of science using the basic knowledge of science.

Philosophy uses the experience gain through critical & scientific observations. It serves as a guide in solving the problems of professional life as well as other aspect of life.

TOOLS OF PHILOSOPHICAL RESEARCH: - Philosophical methods or tools are not basically scientific and are largely subjective. The solution of problem is done critical thinking. It is supported by observations of passing conditions & historical forces that brought it into existence.

It takes the conclusion of science, uses facts of raw materials & develop larger point of view. It makes use of experience by observing & using scientific observation s & findings.

Philosophical research does not primarily use the already existing knowledge or observations directly as a repetition of the earlier situation. It is infact used to solve problems which are unique in nature & have never been faced earlier.

Any types of gadgets are not used & neither there is "cause and effect relationship". It is only through critical thinking which exists in individual's mind.

STEPS IN CRITICAL THINKING/ PHILOSOPHICAL RESEARCH:-

John Deweys Steps:-

1. Recognition of a felt difficulty/ need.
2. The identification, definition & delimitation of the difficulty: - In this we locate & define the problem/ thing. The problem is to be identified & taken one by one so researcher delimits himself/herself.
3. Formulation of hypothesis for its solution with the help of available facts. What should be done it gives us direction &we make hypothesis on the basis of existed facts. With that we can't also presume about the problem. In Philosophical research we also don't know the final outcome.
4. Expansion & development of hypothesis through reasoning:- In this the hypothesis is not tested & there is no selection or rejection of hypothesis. We move ahead on the basis of facts & experience.
5. Other additional Steps:-
   i. Synthesis & analysis of facts, working them into patterns that identify the relationship among them. Collecting the facts & arranging them in a sequence.
   ii. Derives general principles from those patterns which describes the relationship within the principles. Getting solution by the help of critical thinking on the basis of insight knowledge. Combining different possibilities.
   iii. State these principles in the form of hypothesis. Critically test the hypothesis for acceptance, rejection or modification. Accept the hypothesis or modify it & trying something new.

DRAWBACKS OF PHILOSOPHICAL RESEARCH:-

1. There is a confusion between science & philosophy.
2. There is lack of definite methodology.
3. People sometimes fail to distinguish between survey & philosophy.
4. Philosophies sometimes try to provide answer for all the questions.
5. Philosophy might be sometimes influenced by bias.

6. Philosophical research needs high level of experience & training.

EXPERIMENTAL RESEARCH

Experimental research is an attempt by the researcher to maintain control over all factors that may affect the result of an experiment. In doing this, the researcher attempts to determine or predict what may occur.

According to John. W. Best: - **"Experimental research is the description & analysis of what will occur under controlled conditions."**

The experimenter manipulates certain stimuli treatment or environmental conditions or behaviour of subject is affected by this manipulation.

- Experimentation provides a method of hypothesis. Hypothesis is tested to confirm or reject it in light of the controlled variable relationship which is observed dependent & independent variable relationship. The confirmation or rejection of hypothesis is in terms of probability rather than certainty (surety is not given)
- The main feature of experimental research is to attempt to control all the essential factors except one which is manipulated in such a manner that its effects can be determined & measured.

Experimental Research Tries to Establish Cause and Effect. That is, an independent variable is manipulated to judge its effect on a dependent variable. The application of this logic is made possible by the following:-

- Selection of a good theoretical framework
- Application of appropriate experimental design
- Use of correct statistical model and analysis
- Proper selection and control of independent variables
- Appropriate selection and measurement of dependent variables
- Correct interpretation of results

Three Criteria for Cause and Effect Relationship:-

1. The cause must precede the effect in time. For example, the starting gun in a race precedes the runner's beginning the race; the runners' beginning does not cause the starting gun to go off.
2. The cause and effect must be correlated with each other. As we have already discussed, just because two variables are correlated does not mean one causes the other; however, cause and effect cannot exist unless two variables are correlated.
3. The correlation between cause and effect cannot be explained by another variable. Recall that the relationship between elementary children's academic performance and shoe size was explained by a third variable, age.

Reviewing Important Terms:-

- Independent variable: - The part of the experiment that the researcher is manipulating. Also called the experimental or treatment, variable.
- Dependent variable: - The effect of the independent variable, also called the yield.
- Categorical variable:- A kind of independent variable that can not be manipulated, such as age, sex and so on also called moderator variable.
- Control variable: - A factor that could possibly influence the results & that is kept out of the study.
- Extraneous variable: - A factor that could affect the relationship between the independent & dependent variables, but that is not included or controlled.

Types of Validity:-

- Internal validity
- External validity

INTERNAL VALIDITY – The validity of findings with the research study; the technical soundness of a study, particularly concerned with the control of extraneous influences that might effect the outcome

- This is the basic minimum without which any study is not interpretable.
- Particularly important in experimental studies.
- Did, in fact, the experimental treatment (X) produce a change in the dependent variable (Y)?
  - To answer yes, one must be able to rule out the possibility of other factors producing the change.
- To gain internal validity, the researcher attempts to control everything and eliminate possible extraneous influences.
- Lends itself to highly controlled, laboratory settings.
- It is very difficult to satisfy both validity at a single time frame. The promotion of one affects the other. It is realistic to identify the specific goals & limitations of research & decide whether internal validity or external validity is more important & one has to scarify one of these validities for the particular experimentation. In internal validity the answer to the question to whom, what & where the findings can be generalized may be very impossible.

  To plan a series of experiments in which the first experiment has strong internal validity even at the expense of external validity. If the first experiment confirms that changes in the dependent measures are the result of manipulating the independent variable, subsequent experiments can be designed to increase internal validity even at the expense of internal validity.

Threats to Internal Validity: - Campbell & Stanley (I963) indentified eight threats to the internal validity of experiments, and Rosenthal (966) identified a ninth:

1. History-during
2. Maturation
3. Testing
4. Instrumentation
5. Statistical regression
6. Selection bias
7. Experimental mortality
8. Selection-maturation interaction
9. Expectancy

- History – events occurring during the experiment that are not part of the treatment. The events occurring between the first and second measurements in addition to the experimental variable which might affect the measurement) . **(E.g. phy. Edu. Program - physical fitness- soccer program)**
- Maturation – biological or psychological processes within participants that may change due to the passing of time, e.g., aging, fatigue, hunger. The process of maturing which takes place in the individual during the duration of the experiment which is not a result of specific events but of simply growing older, growing tired or similar changes.
- Testing – the effects of one test upon subsequent administrations of the same test. **(E.g tennis beginners -20 forehand shots with balling machines)**
- Instrumentation – changes in testing instruments, raters, or interviewers including lack of agreement within and between observers. E.g. Spring loaded device –strength- decrease tension, observers drift.
- Statistical regression – the fact that groups selected on the basis of extreme scores are not as extreme on subsequent testing. (Non random selection) e.g. active v/s inactive students –playground. It is a particular problem in studies that attempt to compare extreme groups selected on some characteristics, such as highly anxious, fit or skilled participants versus not very anxious, fit or skilled participants.
- Selection bias – identification of comparison groups in other than a random manner

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- Selection bias – identification of comparison groups in other than a random manner

- Experimental mortality – loss of participants from comparison groups due to nonrandom reasons
- Interaction among factors – factors can operate together to influence experimental results

EXTERNAL VALIDITY

External Validity –The degree to which the findings can be inferred to the population of interest or to other populations or settings; the generalizability of the results.

- Both are important in a study but they are frequently at odds with one another in planning and designing a study
- Internal validity is considered the basic minimum for experimental research
- Generalizability of results . . . to what populations, settings, or treatment variables can the results be generalized?
- Concerned with real-world applications
- What relevance do the findings have beyond the confines of the experiment?
- External validity is generally controlled by selecting subjects, treatments, experimental situations, and tests to be representative of some larger population
- Random selection is the key to controlling most threats to external validity

Types of External Validity

- Population Validity –
  - refers to the extent to which the results can be generalized from the experimental sample to a defined population
- Ecological Validity –
  - refers to the extent to which the results of an experiment can be generalized from the set of environmental conditions in the experiment to other environmental conditions.

Threats to External Validity:-

- **Reactive or Interactive effects of testing** – the fact that the pretest may make the participants more aware of or sensitive to the upcoming treatment. e.g. pretest make more aware of or sensitive.
- **Interaction of selection bias and experimental treatment:**– when participants are selected in a manner so they are not representative of any particular population
- **Reactive effects of experimental arrangements** – the fact that treatments in constrained laboratory settings may not be effective in less constrained, real-world settings
- **Multiple-treatment interference** – when participants receive more than one treatment, the effects of previous treatments may influence subsequent ones

CONTROLLING THREATS TO INTERNAL VALIDITY

- Randomization:- The randomization process controls for history up to experiment; i.e. the researcher can assume that past event are equally distributed among groups. The researcher must try to prevent an event (besides the treatment) from occurring in one group but not in the other groups. Randomization also controls for maturation because the passage of time is equivalent in all groups. Statistical regression, selection
- Placebos:- A method of controlling a threat to internal validity in which a control group receives a false treatment while the experimental group receives the real treatment.
- Blind setups:- A method of controlling a threat to internal validity in which the participant does not know whether he or she is receiving the experimental or control treatment.
- Double-blind setups:- A method of controlling a threat to internal validity in which neither the participant nor the experimenter knows which treatment the participant is receiving.

UNCONTROLLED THREATS TO INTERNAL VALIDITY:-

- Reactive effects of testing
- Instrumentation
- Experimental mortality

Controlling Threats to External Validity

- Selecting from larger population
  - Participants
  - Treatments
  - Experimental Situations
- Ecological validity-emulates the real world.

EXPERIMENTAL DESIGNS: - The experimental design is the blue print of procedures which enable the researcher to test hypothesis by reaching valid conclusions about relationship between dependent and independent variables. The selection of the design is based on the purpose of experiment, the type of variables & the conditions or limiting factors. The design deals with practical problem such as the selection of subjects, manipulation of variables & statistical analysis. The adequacy of experimental designs is judged by the degree to which they minimize the threat to experimental validity.

EXPERIMENTAL DESIGNS

PRE EXPERIMENTAL	TRUE EXPERIMENTAL	QUASI-EXPERIMENTAL
One shot design	**Randomized-groups**	**Reversal**
One group Pretest-posttest	**Pretest- posttest randomized-groups**	**Ex Post facto design**
Static group comparison	**Solomon four group**	**Time series design**
		Single subject design

- PRE EXPERIMENTAL DESIGN: - One of the three types of research design that control very few of the sources of invalidity and that do not have random assignments of participants to groups. They are as follows:- T- means treatment and O means observation.

a. **One shot design:-** In a one shot study design, a group of participants receives a treatment followed by a test to evaluate the treatment: T O
This design fails all the tests of good research. In no way we can the level of performance (O) be attributed to the treatment (T).

b. **One group Pretest-posttest design:-** It is although very weak but better than the one shot design. At least we can observe whether any change in performance has occurred: O_1 T O_2
If O_2 is better than O_1 , we can say that the participants improved.

c. **Static group comparison design :-** This design compares two groups, one of which receives the treatment and one of which does not:
T O_1
.....
O_2
However, we don't know whether the groups were not equivalent when the study began, as indicated by the dotted line. This means that the groups were selected intact rather than being randomly formed.

Note: - Three experimental designs are not valid methods of answering research questions. They do not represent experiments because the change in the dependent variable can not be attribute to manipulation of the independent variable.

- TRUE EXPERIMENTAL DESIGN:- Any design used in experimental research in which groups are randomly formed, allowing the assumption that they were equivalent at the beginning of the research and that controls most sources of invalidity. They are:-

a. **Randomized-groups design:-** It resembles with static group comparison design except that the groups are randomly formed:

R T O_1

R O_2 (can be extended to any no. of levels. Independent T test)

b. **Pretest-posttest randomized-groups:-** Groups are randomly formed, but both groups are given a pretest as well as posttest. The major purpose of this type of design is to determine the amount of change more than produced by the treatment; i.e., does the experimental group change more than the control group?:-

R O_1 T O_2

R O_3 T O_4

c. **Solomon four group design:-** This is the only design to specifically evaluate one of the threats to external validity: reactive or interactive effects of testing. The design depicted as follows:

R O_1 T O_2

R O_3 O_4

R T O_5

R O_6

This design combines the randomized groups and the pre-test-posttest randomized groups designs. It also allows the replication of the treatment effect.

- QUASI-EXPERIMENTAL DESIGNS: Research designs in which the experimenter tries to fit the design to real-world settings while still controlling as many of the threats to internal validity as possible. They are as follows:-

a. **Reversal design:-** The reversal design is used increasingly in school and other naturalistic setting and is depicted as follows:-

O_1 O_2 T_1 O_3 O_4 T_2 O_5 O_6

b. **Ex Post facto design:-**

c. **Time series design**

d. **Single subject design**

UNIT-V

POPULATION: - It is the collection of units having similar properties under study. Population may also be defined as families, schools, colleges and universities etc.

SAMPLE: - A small portion of population units is a sample or in other words sample is the subset of a population. The concept of representativeness should be induced in the sample for drawing valid conclusions about population parameters.

CHARACTERISTICS OF A GOOD SAMPLE:-

1. Representative sample: it possesses the characteristics of the population under controlled experimental errors.
2. Free from bias.
3. Possess the least sampling error.
4. Sample selection should be according to sampling plan.
5. It should not ignore any portion of population.
6. Optimum (best possible) in size.
7. Only independent units must be selected in the sample.

ADVANTAGES OF SAMPLE OVER POPULATION STUDY:-

1. Reduction of cost:- (Money or man hours)
2. Reduction of Time.
3. Better control over field investigator.
4. Subjects can be properly motivated.
5. Reduction of non-response error.
6. Administrative Conviences:-
   i. control time & experiment
   ii. Efficiency and accuracy of data
   iii. Reduce errors in estimating the population characteristics.

DISADVANTAGES OF SAMPLE STUDY:-

1. May involved biased selection of subject.
2. Due to many factors involved in drawing a good sample, it is difficult to obtain a representative sample.
3. Specialized knowledge is required without which one may commit serious mistakes.
4. Sampling may not be suitable where a higher standard of accuracy is expected.
5. If the population is very small or so heterogeneous that is it is not possible to draw a representative sample, population study would be the only alternative.

TYPES OF ERROR:-

i. **Sampling Error:-** Any type of bias that results from mistakes in either the selection process for prospective sampling units or in determining the sample size.

ii. **Non Sampling Error:-** Bias that occurs in a research study regardless of whether a sample or census is used; e.g., bias caused by measurement errors, response errors, coding errors, etc.

SAMPLING TECHNIQUES: - It involves selecting a relatively small number of elements (sample) from a larger defined group (population) and expecting the information gathered from the small group will enable judgments about the larger group.

i. **Non probability:** Sampling methods that do not let us know in advance the likelihood of selecting for the sample each element or case from a population. E.g. **Simple Random Sampling, Systematic Random Sampling, Stratified Random Sampling, Cluster Sampling and Sequential Sampling.**

ii. **Probability:** Sampling methods that allow us to know in advance how likely it is that any element of a population will be selected for the sample. E.g. **Convenience Sampling, Judgment Sampling, Quota Sampling and Snowball Sampling.**

Knowing the chance of selection allows one to control sampling bias (under or overrepresentation of a population characteristic in a sample).

1. **Simple Random Sampling:** - A method of probability sampling in which every unit has a known and equal chance of being selected. Every subset of a specified size n from the population has an equal chance of being selected.

Advantages of Random Sampling:-

i. It is free from bias.
ii. It is more representative.
iii. It does not depend upon the prior knowledge of the population.
iv. It facilitates the analysis of data which includes use of inferential, comparative, relationship and predictive statistics.
v. It is easy to calculate the sampling error in this method.

Disadvantages of Random Sampling:-

i. The selection of sample becomes difficulty when the population units are widely dispersed.
ii. In many studies it is difficult to have a population which is completely catalogued.
iii. Random sampling is not suitable if the population is heterogeneous.
iv. Random sampling is subjected to more errors for the same sample size than are found in stratified sampling.

2. **Systematic Random Sampling:-** A method of probability sampling in which the defined target population is ordered and the sample is selected according to position using a skip interval.

Steps in Drawing a Systematic Random Sample:-

i. Obtain a list of units that contains an acceptable frame of the target population.
ii. Determine the number of units in the list and the desired sample size.
iii. Compute the skip interval.
iv. Determine a random start point.
v. Beginning at the start point, select the units by choosing each unit that corresponds to the skip interval.

3. **Stratified Random Sampling:-** a method of probability sampling in which the whole population is divided into different homogeneous subgroups (strata) and samples are selected from each. The sample so obtained from each stratum together is known as stratified sample. The population is divided into two or more groups called strata, according to some criterion, such as geographic location, grade level, age, or income, and subsamples are randomly selected from each strata.

Following points may be kept in mind while constructing strata:-

i. Criteria for stratification:- region, income, sex or (on the basis of nature of study)
ii. Stratum Size:- Optimum size.
iii. Homogeneity of the strata must be ensured.
iv. Strata should be non overlapping:- Every unit finds a place in one or the other stratum and no unit is placed in more than one strata.

Stratified Random Sampling

- ***Proportionate Stratified Sampling***

Ensuring that population proportions are reflected in proportions of each stratum of sample.

- ☐ Population: 4% black, 25% Latino, 27% Asian, 44% white
- ☐ Sample of 1,000: 40 black, 250 Latino, 270 Asian, 440 white

- ***Disproportionate Stratified Sampling***

Population proportions are NOT reflected in proportions of each stratum of sample.

- ☐ Population: 4% black, 25% Latino, 27% Asian, 44% white
- ☐ Sample of 1,000: 250 black, 250 Latino, 250 Asian, 250 white
- ☐ Idea is to get a lot of cases in each stratum
- ☐ When combining all cases into one sample, use weighted averages

Advantages of Stratified Sampling:-

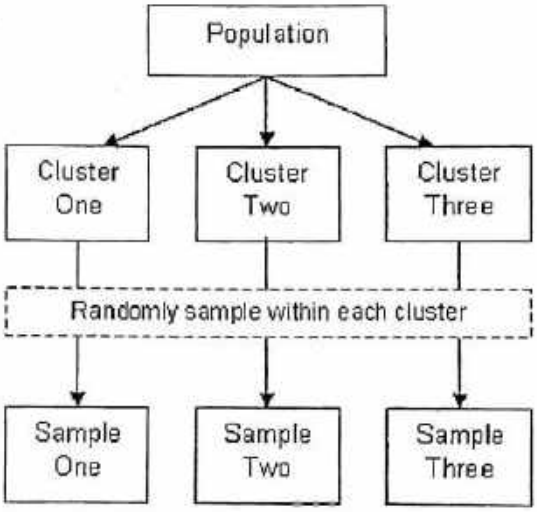
i. It provides greater control over the sample as no portion of population is left out being represented in the sample due to stratification.

ii. If stratum is perfectly homogeneous even a small sample would be serve the purpose.
iii. Replacement of unit is possible in case of non response. If an athlete or subject refuses to cooperate with the investigator, this may be replaced by another individual from the same stratum.

Disadvantages of Stratified Sampling:-

i. Faulty stratification may lead to bias in the sample.
ii. In stratified sampling a deliberate attempt has to be made to attain a proportionate sample.
iii. In case of no clear cut strategies for stratification it is difficult to put a particular case in a stratum
iv. In the absence of information on proportion of population in each category drawing the sample becomes difficult.

- Cluster Sampling:- a method of probability sampling where the sampling units are selected in groups rather than individually. The population is divided into subgroups (clusters) like families. A simple random sample is taken of the subgroups and then all members of the cluster selected are surveyed.



Sequential Sampling:- a method of probability sampling where the sampling units are drawn one by one. The idea is to draw the minimum sample reuired for drawing the conclusion about the hypothesis to tested.

Such sampling plan is preferred if either the cost of enumerating a sample is high or if the item included in the sample is destroyed after testing.

Non probability Sampling Methods:-

i. Convenience sampling . . . relies upon convenience and access.
ii. Judgment sampling . . . relies upon belief that participants fit characteristics.
iii. Quota sampling . . . emphasizes representation of specific characteristics.
iv. Snowball sampling . . . relies upon respondent referrals of others with like characteristics.

- CRITERIA FOR DECIDING THE SAMPLE SIZE:- Sample size could be decided by knowing the nature of the problem. In fact there are two criteria on which issue of deciding the sample size is based:-

a. Accuracy factor:-

b. Cost factor:- $C = a + nc1$

Where, a = overhead expenditure

c1 = cost of evaluating one unit

n = size of the sample

C =total amount available to researcher

ERRORS IN SAMPLING: - Non-Observation Errors

- Sampling error: naturally occurs
- Coverage error: people sampled do not match the population of interest
- Underrepresentation
- Non-response: won't or can't participate

ERRORS OF OBSERVATION:- Interview error- interaction between interviewer and person being surveyed

- Respondent error: respondents have difficult time answering the question
- Measurement error: inaccurate responses when person doesn't understand question or poorly worded question
- Errors in data collection

RESEARCH PROPOSAL (It is always in future tense):- After selecting a problem the research scholar has to submit a proposal to the university to get the problem approved. The proposal should be good enough to satisfy the committee, that the problem is important, feasible & worth investigating. The research proposal basically contains definition, scope, significance, a brief review of the related literature & the methodology which will be used for the study.

NEED OF RESEARCH PROPOSAL:-

i. For the selection of problem.
ii. For the selection of methodology.
iii. To give idea about the problem.
iv. To use as reference (Review part)
v. To support the findings.
vi. To tell about the contribution.
vii. To make the research ready for the collection of equipment, instruments.
viii. To prepare him/her about the topic & other related topic or literature.
ix. To give idea about the steps this will be followed for doing the research work.
x. To predetermined about the problems which could be faced by the research scholar.

PREPARATION OF RESEARCH PROPOSAL:- The proposal includes the following areas:-

Chapter-I : Introduction

A brief introduction about the topic is necessary for stimulating interest towards the problem & establishing a rationale (justification) & significance of the study. The importance of study & its contribution to profession should be main focus of this chapter. The decision of the committee for approval or disapproval basically rest on the impression should in the chapter.

This chapter includes:-

a. Statement of the problem
b. Delimitations
c. Limitations
d. Hypothesis
e. Significance of the study
f. Definition & explanation of the important terms

Chapter-II : Review of Related Literature:- It provide the background of information of the previous researches done on the topic or similar topic pointing out the weakness, conflicts & areas which needs further investigation. This chapter is important for the formulation of hypothesis, deductive reasoning in the formation of the statement of problem & logically support of the findings.

Chapter –III : Methodology of Procedure

In this chapter the researcher clearly describes the procedure to be adopted for the collection of data to solve the research problem. The researcher specifies about the selection & procedures of selection. It will be followed by method of measurement along with the reliability of instrument 7 data. If the study is an experimental study the

procedure of experiment/ treatment is to be given along with the experimental design. It will be followed by the method of collection of data & statistical procedure used for the analysis of the data.
Bibliography: - The list of references of books, journals, periodicals or internet referred by the research scholar.

RESEARCH REPORT:-This is always presented in a past tense. **Purpose:-** The research scholar has to present the details for the work as done by him, in lines with the proposal which he gave. In the research proposal he created the situations under which he got the permission to go through his work. In the report he give first 3 chapters in much detailed form along with the methodology used by him, the discussion & the findings in the 4th chapter. followed by the summary, conclusions & recommendations in the 5th chapter.
It will again followed by the bibliography of the reference material. The report goes for the evaluation to examine & after he is awarded with the degree.
This report is the detailed explanation of work done by him & acts as a reference material.

PARTS OF RESEARCH REPORT:-

The research report of the main thesis / dissertation presented for the evaluation included the following heads:-

1. The preliminaries (Front material)
2. The main body of thesis
3. The reference material

This is always presented in a past tense.

The preliminaries:-

a. Front fly leaf:- A front fly leaf is provided in the thesis between the cover page & the title page. This sheet is not counted in the pagination.

b. Title Page:- The first page of the thesis is the title page. The title page includes:-

(i) The title of the thesis in inverted pyramid form.

(ii) It includes the author's name followed by the name of institution along with the course for which it is required followed by the month & year of the publication.

c. Dedication:- A separate sheet is used to enable the research scholar to recognize those who are near & dear or inspirational for the study.

d. Approval Page:- A separate approval page should be provided which contains the signature & name of the thesis advisor.

APPROVED BY [SIGN OF ADVISOR]
[FULL NAME OF THE ADVISOR]

e. Vita:- It includes name of the author, his professional & other qualifications etc.

f. Acknowledgement:- The research scholar convey his thanks & sense of gratitude towards the head of the institute for permitting the research work followed by his thesis advisor followed by all those who helped him during his research work including the subjects.

g. Table of Content:- It includes list of tables followed by list of illustrations, charts, graphs, figures etc. & their pagination is done in roman no.s.

Chapter-I Introduction [Pagination in roman no.s]

- Introduction
- Statement of the problem
- Delimitations
- Limitations
- Hypothesis
- Significance of the study
- Definition & explanation of terms

Chapter-II Review of related literature:-

Chapter- III Methodology:-

- Selection of subjects
- Selection of variables
- Selection of criterion measures
- Reliability of data
- Instrument reliability
- Tester's competency (by test retest method)
- Reliability of tests
- Procedure for administration of test
- Statistical Technique

Chapter-IV Analysis Of Data, Results & Discussion

- Findings
- Discussion of findings
- Discussion of hypothesis

Chapter-V Summary, Conclusions & Recommendations

- Summary
- Conclusions
- Recommendations

Bibliography

Appendices (Data of test, the questionnaire which we have used, its norms)

THE MAIN BODY OF THESIS: - Chapter I, II, III are same but written in past tense.

Chapter –IV Analysis of data, results & discussion:- The result of study including the tables for statistical calculation are provided under the findings (after the brief introduction) which is followed by the discussion of findings & reference material which are similar to the findings. The hypothesis is discussed on the basis of the findings & their acceptance or rejection or both (partially accepted/ partially rejected) is to be given.

Chapter-V Summary, Conclusions & Recommendations

Summary includes an overview of all the findings including the methodology.

Conclusion is the interpretation of the research work on the basis of the findings.

Recommendations:- In this the suggestions are given in probability.

Reference Material:- Bibliography should contain all reference material appearing in the foot-notes & in second chapter.

Bibliography should start by author's last name followed by the first name & then the middle name (remaining). If the author's has more than one reference then they should be arranged alphabetically according to the title. There are different sections for books, periodical (journals & dissertations), thesis, dictionary & encyclopedias & unpublished material.

The bibliography starts with the name followed by the name of the book followed by the place of publication followed by publishers & the year the publication

Foot-notes:- The name is given as it is all other entries are the same but page no. is given:- P-28, P-39 at the end. If the page is more than one then PP-35 to 40

Journals & Periodicals:- Name of the author, the word for which you have seen the encyclopedia within inverted comma & followed by the name of encyclopedia & volume followed by the year.

Dictionary:- Name of the word within inverted comma followed by name of dictionary & edition followed by the year of publication.

Emails to the author & date month & year

Websites e.g. *www.fih.co.in*

PROBLEMS OF PREPARATION OF REPORT:-

i. The most important or crucial problem face by the researcher is that in his report he become biased & start proving his hypothesis. The hypothesis should be tested & reported.
ii. While reporting it must be kept in mind that the report should be in past tense (III person)
iii. Inability to reach to primary sources of reference material
iv. Lack of standard format (Institution/ University)
v. To keep the size of the research report to optimum. (over enthusiastic scholar)

CHARACTERISTICS OF GOOD RESEARCH REPORT:-

i. It should be written in past tense (Third person).
ii. It should have the latest reference & arranged in such a way the references slowly move on year wise coming closer to the year of research.
iii. The reference should be authenticated through primary sources.
iv. As far as the work should be supported by critical literature.
v. The headlines of the topic as well as the initial title of the chapter should be written as per the format.

QUALITIES OF A GOOD RESEARCHER:-

i. Good academic standard
ii. He must have formal training in the methodology of research
iii. He must have a very high intellectual caliber
iv. He should be committed to his profession and to the traditions and technical standards of research procedures.
v. He must have a high moral character

All the best for your examinations