BHARATHIDASAN UNIVERSITY

TIRUCHIRAPPALLI-620 024,

Tamilnadu, India

Programme : Bachelor of Physical Education

Course Title: Research and Statistics in Physical Education

Course Code: 21BPE43

Unit -2

RESEARCH METHODS

Dr. R. JAGATHESAN
Guest Lecturer
Department of Physical Education and Yoga

UNIT -2

Research methods

This is a set of systematic technique used in research. This simply means a guide to research and how it is conducted. It describes and analysis methods, throws more light on their limitations and resources, clarify their pre- suppositions and consequences, relating their potentialities to the twilight zone at the frontiers of knowledge.

Research methods are the strategies, processes or techniques utilized in the collection of data or evidence for analysis in order to uncover new information or create better understanding of a topic.

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods/techniques but also the methodology.

Research Ethics

According to The Research Excellence Framework, 2014, research is "a process of investigation leading to new insights, effectively shared." Research is a multi-stage process. Ethics are central to the research process. Researchers need to take care of various ethical issues at different levels of this process. The reality is there can be ethical concerns at every step of the research process **(Bickman& Rog, 2009)**.

Need for surveying related literature

Survey of related literature means a careful perusal of researches already done and write ups published or lectures delivered on issues directly or indirectly connected with the problem being proposed for investigation. It means having a soaking into the waters of knowledge, which has relevance to the study in hand.

Every research begins from where the previous researchers have left it and goes forward, may be one inch or even less towards the solution of the problem or answer of a question. Therefore for every researcher it is essential to acquaint himself with what has already been thought, expressed and done about the problem under investigation. This is possible only if he/she reviews and surveys books, journals, newspapers, records, documents. Thesis, indexes, abstracts, dissertations and other sources of information directly or indirectly concerned with problem of investigation.

Importance of Related Literature

1. The review of related literature enables the researcher to define the limits of his field. It helps him to delimit and define his problem.
2. By reviewing the related literature, the researcher can avoid unfruitful and useless problem areas. He can select those areas in which positive findings are very likely to result and his endeavors would likely add knowledge in a meaningful way

3. It helps a researcher to know about the tools and instruments which Proved to be useful and promising in the previous studies. The advantage of related literature is also to provide an insight into the statistical method through which validity of the results is to be established.
4. Through the review of literature, a researcher can avoid unintentional duplication of well established findings. It is no use to replicate a study when the stability and validity of its results is to be established.
5. Another purpose for reviewing the related literature is to know about the recommendations of previous researchers for further research which they have listed in their studies.
6. It helps in speculating useful hypothesis and provides helpful suggestions for significant investigation. The studies that show substantial agreements and those that seem to present conflicting conclusions help the researcher to sharpen his understanding.

Literary Sources

Literary sources are the information gathered in written forms that explain the essence of ancient culture. Sources incorporate information like journals, letters, books and investigative reports in impression, automated and visual compositions.

SOURCES FOR LITERATURE RESEARCH & ANALYSIS

1. PRIMARY SOURCES

- ❖ Creative Works: novels, poems, stories, plays
- ❖ Documents of Personal Activity: autobiographies, memoirs, letters, interviews

2. SECONDARY SOURCES

- ❖ Critical Analysis (journal article, book, book chapter, conference paper)
- ❖ Book Reviews
- ❖ Biographies
- ❖ Conference Papers
- ❖ Dissertations

TERTIARY SOURCES

- ❖ Literature Encyclopedias
- ❖ Literary Dictionaries
- ❖ Literary Handbooks
- ❖ Book-length Bibliographies

Library Research

Library research is a technique of collecting data by learning and understanding data which has close relation with the problems from books, theories, notes, and documents. It is a general or specialized library that collects materials for use in intensive research projects (Mary George, 2008)

Research Design

Research design is a set of advance decisions that make up the master plan specifying the methods and procedures for collecting and analyzing the needed information.

A research design is a plan, structure and strategy of investigation… to obtain answers to research questions or problems. It includes anoutline of what the investigator will do from writing the hypotheses …to the final analysis of data. (**Kerlinger 1986).**

A traditional research design is a blueprint ordetailed plan for how a research study is to becompleted - **(Thyer 1993).**

Types of research design

1. **Descriptive research design:**

In a descriptive design, a researcher is solely interested in describing the situation or case under their research study. It is a theory-based design method which is created by gathering, analyzing, and presenting collected data. This allows a researcher to provide insights into the why and how of research.

2. Experimental research design:

Experimental research establishes a relationship between the cause and effect of a situation. It is a causal design where one observes the impact caused by the independent

variable on the dependent variable. For example, one monitors the influence of an independent variable such as a price on a dependent variable such as customer satisfaction or brand loyalty. It is a highly practical research method as it contributes to solving a problem at hand.

3. Correlational research design:

Correlational research is a non-experimental research technique that helps researchers establish a relationship between two closely connected variables. This type of research requires two different groups. There is no assumption while evaluating a relationship between two different variables, and statistical analysis techniques calculate the relationship between them.

4. Diagnostic research design:

In diagnostic design, the researcher is looking to evaluate the underlying cause of a specific topic or phenomenon. This method helps one learn more about the factors that create troublesome situations.

This design has three parts of the research:

- · Inception of the issue
- · Diagnosis of the issue
- · Solution for the issue

5. Explanatory research design:

Explanatory design uses a researcher's ideas and thoughts on a subject to further explore their theories. The research explains unexplored aspects of a subject and details about what, how, and why of research questions.

SURVEY RESEARCH

Survey research is defined as "the collection of information from a sample of individuals through their responses to questions" (Check & Schutt, 2012),

Need for survey

1. Carefully planned surveys are extremely helpful in bringing to light the strengths and weaknesses of individuals, institutions and practices.

2. Surveys shall be of great help to the policy makers and the practitioners to appraise the situation and modify the system for achieving better performance.
3. Surveys are essential to determine the present trends and solve current problems.
4. Survey is considered as a starting point for future planning.
5. The results of the surveys help the individuals to compare their experience with the findings.

SAMPLING

The researcher is concerned with the generalizability of the data beyond the sample. For studying any problem it is impossible to study the entire population. It is therefore convenient to pick out a sample out of the universe proposed to be covered by the study. The process of sampling makes it possible to draw valid inferences or generalizations on the basis of careful observation of variables within a small proportion of the population.

Meaning

Universe or Population : It refers to the totality of objects or individuals regarding which inferences are to be made in a sampling study.

It refers to the group of people, items or units under investigation and includes every individual.

First, the population is selected for observation and analysis.

Sample

It is a collection consisting of a part or subset of the objects or individuals of population which is selected for the purpose, representing the population sample obtained by collecting information only about some members of a population.

Sampling

It is the process of selecting a sample from the populat.

TYPES OF SAMPLING

1. Probability Sampling and
2. Non-Probability Sampling

PROBABILITY SAMPLING

Following are the types of probability sampling

1. Simple random sampling
2. Systematic sampling
3. Stratified sampling
4. Cluster sampling

1. Simple Random Sampling

In this all members have the same chance (probability) of being selected. Random method provides an unbiased cross selection of the population. For Example, we wish to draw a

sample of 50 students from a population of 400 students. Place all 400 names in a container and draw out 50 names one by one.

2. Systematic Sampling

Each member of the sample comes after an equal interval from its previous member. For Example, for a sample of 50 students, the sampling fraction is 50/400 = 1/8 i.e. select one student out of every eight students in the population. The starting point for the selection is chosen at random.

3. Stratified Sampling

The population is divided into smaller homogenous group or strata by some characteristic and from each of these strata at random members are selected. For Example, population is Christian community of greater Mumbai region. It is divided into strata as professionals, skilled workers, Laborers and Managers then from each strata sampling fraction. i.e. Sample size / Total population x Total No. in the strata is chosen. Finally from each stratum using simple random or systematic sample method is used to select final sample.

4. Cluster Sampling (Area Sampling)

A researcher selects sampling units at random and then does complete observation of all units in the group. For example, your research involves kindergarten schools. Select randomly 15 schools. Then study all the children of 15 schools. In cluster sampling the unit of sampling consists of multiple cases. It is also known as area sampling, as the selection of individual member is made on the basis of place residence or employment.

5. Multistage Sampling

The sample to be studied is selected at random at different stages. For example, we need to select a sample of middle class working couples in Maharashtra state. The first stage will be randomly selecting a specific number of districts in a state. The second stage involves selecting randomly a specific number of rural and urban areas for the study. At the third stage, from each area, a specific number of middle class families will be selected and at the last stage, working couples will be selected from these families.

NON-PROBABILITY SAMPLING

1. Purposive Sampling
2. Convenience Sampling
3. Quota Sampling
4. Snowball Sampling

1. Purposive Sampling

In this sampling method, the researcher selects a "typical group" of individuals who might represent the larger population and then collects data from this group. For example, if a researcher wants to survey the attitude towards the teaching profession of teachers teaching students from lower socio-economic stratum, he or she might survey the teachers teaching in schools catering to students from slums (more specifically, teachers teaching in Municipal schools) with the assumption that since all teachers teaching in Municipal schools cater to students from the lower socio-economic stratum, they are representative of all the teachers teaching students from lower socio-economic stratum.

2. Convenience Sampling

It refers to the procedures of obtaining units or members who are most conveniently available. It consists of units which are obtained because cases are readily available. In selecting the incidental sample, the researcher determines the required sample size and then simply collects data on that number of individuals who are available easily.

3. Quota Sampling

The selection of the sample is made by the researcher, who decides the quotas for selecting sample from specified sub groups of the population. Here, the researcher first identifies those categories which he or she feels are important to ensure the representativeness of the population, then establishes a sample size for each category, and finally selects individuals on an availability basis. For example, an interviewer might be need data from 40 adults and 20 adolescents in order to study students' television viewing habits. He therefore, will go out and select 20 adult men and 20 adult women, 10 adolescent girls and 10 adolescent boys so that they could interview them about their students' television viewing habits.

4. Snowball Sampling

In snowball sampling, the researcher identifying and selecting available respondents who meet the criteria for inclusion in his/her study. After the data have been collected from the subject, the researcher asks for a referral of other individuals, who would also meet the criteria and represent the population of concern.