

# MED-308

Advanced Research  
Methodology and Inferential  
Statistics

# Objectives of the course -

- ▶ To enable students to:
- ▶ 1) to understand the concept of Research and Educational Research.
- ▶ 2) to understand basics of qualitative research and techniques of qualitative data analysis.
- ▶ 3) to use the library , Internet services and other sources of knowledge for educational research purpose.
- ▶ 4) to understand the role and use of statistics in educational research.
- ▶ 5) to select the appropriate statistics methods in educational Research.
- ▶ 6) to review the educational research articles.
- ▶ 7) to use computers for data analysis.

# UNIT NO: 1 - Qualitative Research

- ▶ 1.1 Meaning and Characteristics of Qualitative Research –
- ▶ There are 2 perspectives of Educational Research –
- ▶ 1) Logical Positivism – तार्किक प्रत्यक्ष ज्ञानवाद
- ▶ Quantitative Research
- ▶ 2) Phenomenology – निरीक्षित घटनाशास्त्र
- ▶ Qualitative Research
  
- ▶ Definition – Denzin and Linken (1994,p-2)-
- ▶ **“Qualitative research is multimethod in focus, involving an interpretive, naturalistic approach to it’s subject matter.”**

# Qualitative Research

- ▶ It is one Research Method.
- ▶ Erikson Said - Interpretive Research Method
- ▶ It give more emphasis on quality, deepness of information, meaningfulness.
- ▶ No Hypothesis construction
- ▶ It is a process of finding the relation between various variables.
- ▶ Here totally think about whole research topic or theme.
- ▶ **TOOLS USED IN Qualitative Research –**
- ▶ **1) Non Constructive Interview**
- ▶ **2) Direct Observation**
- ▶ **3) Written Material**
- ▶ Interpretation Process is Continuously going on during whole Research.
- ▶ **Research Methods in Qualitative Research -**
- ▶ Case Study, Ethnographic Studies or Cultural anthropology, Document or Content Analysis, Survey Method, Interpretive method, Mixed method

# Characteristics of Qualitative Research- Patten(1990)

- ▶ Actual Facts are recorded by researcher.
- ▶ Conclusions are drawn by Inductive Method.
- ▶ Naturalistic Inquiry technique is used for Qualitative Research.
- ▶ Qualitative Research's Field Area is not artificial, it is Natural.
- ▶ All incidents are discussed in detail.
- ▶ To interpreted according to thinking of all persons included in research process .
- ▶ Qualitative Research is not constructed with pre-planning process .It is free according to next coming experiences .
- ▶ In this research purposive sampling method is used for collecting data in details.

# ASSUMPTIONS OF QUALITATIVE RESEARCH

- ▶ Qualitative Research is **Descriptive**.
- ▶ In this type of research ,Direct observation, Communication ,Visits are included.
- ▶ Here, **Process** is more important than output.
- ▶ This method is **Inductive Method**.
- ▶ In this research - case study of person, family, institution or any social group
- ▶ This is field study method. In it observation and communication is important.
- ▶ It is also called the Ethnographic Studies ( Cultural Anthropology ).
- ▶ In this method , Content Analysis and Document Analysis is important.
- ▶ In Qualitative Research ,Survey method , Interpretative and Mixed method is mostly used .

## 1.2 STEPS INVOLVED IN QUALITATIVE RESEARCH -

- ▶ गुणात्मक संशोधन - विषय.
- ▶ कोठारी आयोगानंतर महाराष्ट्रातील शिक्षण प्रणालीत केले गेलेले बदल.
- ▶ यशवंतराव माध्यमिक विद्यालयातील शिक्षक विद्यार्थी यांचे नाते.
- ▶ लोकमत वृत्तपत्रात 2015 ते 2020 या कलावधीत आलेल्या शिक्षण विषयक लेखांचा आढावा.
- ▶ Educational Contribution of politicians in Maharashtra from 1947.
- ▶ The study of educational and social thoughts of Sayajirao Gaekwad.

# STEPS OF QUALITATIVE RESEARCH -

## 1. Introduction -

Problems, Definitions , Assumptions, Scope and Limitations.

## 2. Review of related Research and Literature.

## 3. Description of process.

## 4. Data Analysis and Interpretation .

## 5. Conclusion.

## 6. Appendix and all proofs.



# 1.3 DIFFERENCE BETWEEN QUALITATIVE AND QUANTITATIVE RESEARCH

## Qualitative research

- ▶ To understand and interpret social interactions.
- ▶ Smaller and not randomly selected.
- ▶ Study of whole , not variables.
- ▶ Words , Images , or Objects.
- ▶ Qualitative data such as open-ended responses, interviews, participants observations, field notes, Written Material and reflections.
- ▶ Identify patterns, features, themes.
- ▶ Subjectivity is expected.

## Quantitative research

- ▶ To test Hypothesis, look at cause and effect and make Predictions.
- ▶ Larger and randomly selected .
- ▶ Specific variable studied .
- ▶ Numbers and Statistics .
- ▶ Quantitative Data based on precise measurements using structure and validated data ,collection , instruments.
- ▶ Identified statistical relationship.
- ▶ Objectivity is critical.

## Qualitative Research

- ▶ Researcher and their biases may be known to participants in the study and participants' characteristics may be known to the researcher.
- ▶ Particular or specialized findings that are less generalizable.
- ▶ Exploratory or bottom-up: the researcher generates a new hypothesis and theory from the data collected.
- ▶ Dynamic, situational, social and personal.
- ▶ Explore, discover and construct.
- ▶ Wide-angle lens; examines the breadth and depth of phenomena.

## Quantitative Research

- ▶ Researcher and their biases are not known to participants in the study and participants' characteristics are deliberately hidden from the researcher.
- ▶ Generalizable findings that can be applied to other populations.
- ▶ Confirmatory or top-down: the researcher tests the hypothesis and theories with the data.
- ▶ Regular and predictable.
- ▶ Describe, explain and predict.
- ▶ Narrow-angle lens, tests a specific hypothesis.

## Qualitative Research

- ▶ Study behavior in a natural environment.
- ▶ Multiple realities ; subjective.
- ▶ Narrative report with contextual description and direct quotations from research participants.
- ▶ **Research Methods-** Case Study, Ethnographic studies, Document Analysis, Survey method, Interpretative method and Mixed methods.

## Quantitative Research

- ▶ Study behavior under controlled conditions ; isolate causal effects.
- ▶ Single reality ; objective.
- ▶ Statistical report with correlations, comparisons of means and statistical significance of findings.
- ▶ **Research Methods -**
- ▶ Historical Method, Survey Method, Experimental Method.

# संख्यात्मक आणि गुणात्मक संशोधन यांतील फरक

## संख्यात्मक संशोधन

- ▶ संख्यात्मक संशोधनात सांख्यिकीय तंत्राचा वापर केला जातो.
- ▶ विविध चलांचे मापन करताना त्यांच्या संख्यात्मक स्थिति चा विचार केला जातो.
- ▶ या संशोधनात परिकल्पना स्वीकारणे अथवा त्याज्य करणे हे संख्यात्मक माहितीच्या आधारे ठरविले जाते .
- ▶ संख्यात्मक संशोधनाला वस्तूनिष्ठ निरीक्षणाचा प्रमुख आधार असतो .

## गुणात्मक संशोधन

- ▶ एरिकसनने गुणात्मक संशोधनाला अर्थनिर्वचनात्मक संशोधन असे नाव दिले आहे.
- ▶ येथे सांख्यिकीय पद्धतीचा त्याग केला जातो.
- ▶ व्यक्तिनिष्ठता , व्यक्तीगत मूल्ये , संशोधकाची मनोभूमिका , तत्वप्रणाली यांचा समावेश होतो.
- ▶ या संशोधनात परिकल्पना मांडणे ही प्रक्रिया नसते.

## संख्यात्मक संशोधन

- ▶ वास्तवता हा या संशोधनाचा मूलभूत स्त्रोत असतो .
- ▶ सामान्य विधान क्षमता व कार्यकारणभाव या संशोधनाची वैशिष्ट्य असतात .
- ▶ संशोधन उद्दिष्टांचे निष्कर्ष हे संख्यात्मक माहितीच्या आधारे काढले जातात.
- ▶ संशोधनात माहितीचे संकलन , सारणीकरण , संख्यात्मक पृथक्करण केल्यानंतर अर्थनिर्वचनाची प्रक्रिया सुरू होते.
- ▶ माहिती संकलनासाठी प्रश्नावली, पूर्व चाचणी ,उत्तर चाचणी, पडताळा सूची , पदनिश्चयन श्रेणी व निरीक्षणाने मिळणारी आकडेवारी ( संख्या ) वापरली जाते.

## गुणात्मक संशोधन

- ▶ या संशोधनात गुणधर्माकडे, माहितीच्या सखोलतेकडे , अर्थपूर्णतेकडे आधिक भर दिला जातो.
- ▶ विविध चलांचा परस्परांशी कोणता संबंध आहे हे शोधण्यासाठी माहिती मिळवण्याची प्रक्रिया पार पाडली जाते.
- ▶ एका पाठोपाठ घडणार्या घटनांवरून उद्गामी पद्धतीने निष्कर्ष काढले जातात.
- ▶ गुणात्मक संशोधनात अर्थनिर्वचनाची प्रक्रिया सुरवातीपासून अखेरपर्यन्त चालूच असते.
- ▶ माहिती संकलनासाठी सखोल व मुक्ता मुलाखती, प्रत्यक्ष निरीक्षण व लिखित साहित्य यांचा वापर केला जातो.

# गुणात्मक संशोधनाची वैशिष्ट्ये -

- ▶ गुणात्मक संशोधनाचे कार्यक्षेत्र कृत्रिम नसून नैसर्गिक असते .जे जसे घडते ते तसे संशोधक पाहतो .
- ▶ एका पाठोपाठ घडणार्या घटनांवरून उद्गामी पद्धतीने निष्कर्ष काढले जातात.
- ▶ घटनेचे सविस्तर वर्णन असते.
- ▶ संशोधन प्रक्रियेच्या अंतर्गत येणार्या विविध व्यक्तींचा स्वतंत्रपणे , त्यांच्या अनुषंगाने , त्यांच्या विचार करण्याच्या पद्धतीचा अभ्यास करून अर्थ निर्वचन केले जाते.
- ▶ हे संशोधन पूर्व नियोजन प्रक्रियेने बंदिस्त नसते तर येणार्या विविधा अनुभवांनुसार त्यात खुलेपणा असतो.
- ▶ या संशोधनात संशोधनास योग्य असणार्या नमूना निवडीचे हेतूपुरस्सर आयोजन केले जाते. जेणे करून त्या संशोधन विषयाची मूलगामी व सविस्तर माहिती मिळेल.

# गुणात्मक संशोधनाची गृहीतके ( मेरियम) -

- ▶ गुणात्मक संशोधन **वर्णनात्मक** असते .संबंधित विषयाची भरपूर माहिती जमा केलेली असते व त्याची सविस्तर माहिती दिलेली असते.
- ▶ त्या मध्ये **क्षेत्र कार्य** समाविष्ट असते. संशोधनाशी संबंधित विषयांसंबंधी प्रत्यक्ष निरीक्षण ,संवाद ,भेटी , चर्चा यातून हे प्रत्यक्षात येते.
- ▶ निष्पत्ती अथवा निर्मितीपेक्षा **प्रक्रियेशी** अधिक संबंध असतो . काय घडले यापेक्षा कसे घडले याकडे अधिक लक्ष दिले जाते.
- ▶ सविस्तर माहितीच्या आधारे अमूर्त संकल्पना , कल्पना , सिद्धांत , परिकल्पना यांची संशोधक उभारणी करित असल्याने ही पद्धत **उद्गामी** आहे.
- ▶ माहिती संकलन आणि पृथक्करण हे अनुभवांचा अर्थ , जीवनप्रक्रियेचा अर्थ कशाप्रकारे लावतात याचा **अर्थ शोधण्याकडे** या संशोधनाला विशेष आवड असते.

# Methods of Qualitative Research

1. Case Study
2. Ethnography
3. Phenomenology

## CASE STUDY—Characteristics-

1. A Specific unit is taken up under the case study method
2. The social unit which is taken up for study is comprehensively studied
3. It studies a typical case
4. The study under this technique is performed patiently for long time
5. This is objective and systematic
6. It tries to explain the behavior of the unit in social surroundings and set up
7. It employs several methods in data collection to prevent errors
8. It tries to clear the cause effect relationship behind the event
9. It often studies a single unit



# Steps in Case Study Method

- ▶ **A} Define the problem clearly**
- ▶ **B} Collect the data required**
- ▶ **C} Identify influential factors**
- ▶ **D} Record and analyze the Data**
- ▶ **E} Draw the Inferences**
- ▶ **F} Prepare a Report**

# Advantages of Case Study Method

- ▶ It helps in the formulation of hypothesis.
- ▶ It makes in depth study.
- ▶ It is a method under which various techniques of data collection and analysis are successfully used .
- ▶ It helps in studying a unique case which is useful in sociology for the study of deviate group.
- ▶ With the help of this method the subjective aspects can be studied thoroughly.
- ▶ Case study can be conducted in practically any kind of social setting.
- ▶ Useful in study of Nature and process of development of a unit, community, culture and society.
- ▶ It makes possible the study of social change.
- ▶ It depends on our perception and gives us a clear insight into life.
- ▶ It enables the Researcher to trace out the natural History of social unit.

# LIMITATIONS OF Case Study

- ▶ It is time consuming and expensive method.
- ▶ It is likely to be affected by the personal bias.
- ▶ It is not possible to compare two cases as it is difficult to find out two identical cases.
- ▶ It is very difficult to establish Reliability in the case study.
- ▶ It can be use only in a limited sphere
- ▶ It is vague and unscientific method because it does not obey the law of sampling and it is not organized and controlled.

## 2. Ethnography -

### ► *Meaning - Ethnography -*

means 'writing culture' or 'writing people'

Comes from Greek

Ethnographers can utilize both qualitative and quantitative procedures.

*Definitions -Johnson*

*ETNOGRAPHY- 'A descriptive account of social life and culture in a particular social system based on detail observations of what people actually do.*

*Features of Ethnography*

- 1. A Strong emphasis on exploring the nature of a particular social phenomenon rather than setting out to test Hypothesis about it.*
- 2. A tendency to work primarily with unstructured data i.e Data that have not been coded at the point of data collection as a closed set of analytical categories*
- 3. Investigation of a small number of cases ( perhaps even just a case )in detail.*
- 4. Analysis of data t5hat evolves explicit interpretation of the meanings and functions of human actions ,the product of this analysis primarily takes the form of verbal descriptions and explanations.*

## ▶ TYPES OF ETHNOGRAPHY

### ▶ A] Tapped Interviews

- A form of Ethnography
- Interview unstructured
- Can be used for any type of Qualitative Research
  - Main idea is Person being studied is in a more natural setting for analysis

### B] Website Usability Testing

- Mouse Tracking may be considered a form of ethnographic Research.
  - Mouse Tracking involves data on where the mouse moves on page ,including the speed ,time spent where the mouse clicks .
- Mouse Tracking also be completed without participant knowledge, which makes it more valuable for analysis.

### C] Product Use

- Ethnography is often used in product development.
- Understands Where a new product can be valuable
  - Customers are struggling for better package, now company knows need of better package.

# Stages of Ethnographic Research

- ▶ A) Problem Formulation - Defining main focus of the study by formulating the problem about which you wish to learn more.

## B) Selecting a Research setting

The first question is knowing and deciding where to begin. The setting should be also helpful to make a clear observation.

It is best to select a setting that you can readily fit in but this does not mean that you are intimately familiar with it.

## c) Gaining Access-How do you get a group that you wish to study?

You may need to seek formal permission which can be facilitated if you have a friend who can vouch for you.

You can also get your foot in the door if you first participate in the group as a volunteer and not as a researcher.

## ▶ D) Presenting Oneself-

▶ Decide how you will present?

▶ Will conducting convert Research?

▶ What roles you need to adopt and relate to others?

▶ How active will you are participating in other people's lives?

If you present yourself as a researcher ,will others be able to accept you in their daily lives?

## ▶ Gathering and Recording Information-

▶ Sometimes it is difficult to record and gather data at the same time. What are the types of information that should be recorded or taken as field notes ? If you can not fully record your observations while you are in the field, what should you do? Always carry a notepad for brief jottings .Sometimes there is no alternative but to wait and record observation after you leave the setting. You should record the observations as soon as possible to minimize recall may also rely on equipments such as audio recorders, video cameras.

# ADVANTAGES And DISADVANTAGES OF ETHNOGRAPHY

## ADVANTAGES---

It provides the researcher with a much more comprehensive perspective than other forms of research.

It is also appropriate to behaviors that are best understood by observing them within their natural environment (dynamics)

## DISADVANTAGES

It is highly dependent on the researcher's observations and interpretations.

There is no way to check the validity of the researcher's conclusion, since numerical data is rarely provided.

Observer bias is almost impossible to eliminate.

Generalizations are almost non-existent since only a single situation is observed, leaving ambiguity in the study.

It is very time-consuming.



# PHENOMENOLOGY

- ▶ **AIM** -To create a comprehensive description of the experience ,often termed the lived experience, of an everyday phenomenon so that its fundamental structure can be understood.
- ▶ Phenomenology is understood in either of two ways; as a disciplinary field in philosophy ,or as a movement in the history of philosophy.
- ▶ The discipline of phenomenology may he defined initially as the study of structures of experience or consciousness.
- ▶ Literally ,Phenomenology is the study of “PHENOMENA” appearances of things ,or things as they appear in our experience.
- ▶ Phenomenology studies conscious experience as experienced from the subjective or first person point of view.
- ▶ The field of philosophy is then to be distinguished from and related to ,the other main fields of philosophy :Ontology (the study of being or what is)Epistemology (the study of Knowledge ),Logic (the study of valid reasoning ),ethics (the study of right and wrong action) etc.

- ▶ 1] Emphasis in Phenomenology
- ▶ A) Perspectives that impact social action and how these perspectives are formed.
- ▶ B) People's interpretation, actions and process of ordering events within a taken-for-granted world.
- ▶ C) Really as it is ordered and interpreted in different relationships and situations.
- ▶ d) Culturally prescribed, socially transmitted patterns of belief and conduct.
- ▶ e) Life world recipes composed of knowledge people have of roles, rules of conduct, common sense principles, morals, norms, customs, fashions, conceptions of natural order, stereotypes and ways of acting accepted by group members and interpretation of typical situations.
- ▶ Intentions, motives and meanings that social action has for actors.

## ▶ 2] SAMPLE RESEARCH QUESTIONS

- ▶ A] What frames of reference to pregnant teens bring to a pre-natal program

Example Cultural and experimental frames of reference ,intensions , of self backgrounds?

B ] What knowledge do volunteers bring in order to help construct the foundation of community development programs ?

C} How are specific groups ,such as First Nations ,guided by motives that determine actions undertaken at celebrations ?

D } How are a patient's everyday expressions transformed into medical or psychological language ?

E} How do we cue to know that a real man should live with pain ,while a wimp should not ?

### ▶ 3} STAGES IN CONDUCTING PHENOMENOLOGICAL RESEARCH

- ▶ A) Identify an area of interest -The first is to have an area of interest or concern and to have spotted an area that has not been researched.
- ▶ B} Understand the Philosophy behind the approach -This is central to Phenomenology ,as it is in all qualitative research. There are a number of schools of thought when it comes to Phenomenology, exhaustive descriptions of which are well beyond the scope , but, for example, two forms are descriptive phenomenology and hermeneutic Phenomenology .
- ▶ Descriptive Phenomenology aims to produce comprehensive description of a phenomenon, while the aim of hermeneutic phenomenology is to produce an interpretation of a phenomenon.
- ▶ C} Data Collection-Data collected in Phenomenological research are invariably verbal in format. Different methods of qualitative data analysis but any data collection when using phenomenological approach should be designed to explore the meaning phenomena for individuals who have experienced that phenomenon.

## ► Advantages Of Phenomenology

- 1. Phenomenological analysis lends itself to further critical analysis.
- 2. Finding help us uncover the meaning people attach to their actions.
- 3. We can attain a picture of how so called Objective Research practices reflect everyday life and common sense understanding.
- 4. Consensus may be considered problematic ,creating a perspective of daily life that involves conflict ,change an contradiction.

## ► DISADVANTAGES OF PHENOMENOLOGY

- 1. Some observers note that phenomenology may be too deterministic in that the world is pre-given and determines behavior.
- 2. Phenomenology reflects social and culturally shared meanings and not personal or transcendent Wes.

# गुणात्मक संशोधनाच्या विविध पद्धती -

## ▶ व्यक्ति अभ्यास ( case study) -

व्यक्ति , कुटुंब , समाजगट , संस्था , समुदाय यापैकी एका एककचा अभ्यास केला जातो.

## ▶ क्षेत्रीय अभ्यास ( Ethnographic studies ) - cultural anthropology

निरीक्षण , संवाद व संबंधित अभ्यासगटाच्या गुण वैशिष्ट्य यांचा अभ्यास केला जातो.

## ▶ दस्तऐवज पृथक्करण ( Document or content analysis ) -

भूतकाळातील व वर्तमान काळातील माहितीचेही पृथक्करण केले जाते.

## ▶ सर्वेक्षण पद्धती (Survey Method) चाही उपयोग केला जातो.

## ▶ अर्थनिर्वचनात्मक (Interpretation) विविध संशोधन पद्धती -

## ▶ मिश्रसंशोधन पद्धती (Mixed Method).

# 1.4 MIXED METHOD -

## ► Concept -

A mixed methods research design is a procedure for collecting , analyzing and “mixing” both quantitative and qualitative data in a single study to understand a research problem . It is a “ legitimate inquiry approach” .

(p-28 Brewer , J. and Hunter , A. 1989)

Mixed methods research designs are procedure for collecting both quantitative and qualitative data in a single study and for analyzing and reporting the data based on a priority and sequence of information .

(p-594 Creswell , J. W. 2005 )

# CHARACTERISTICS OF MIXED METHOD

- ❑ The ultimate purpose of the mixed methods research design is to understand the research problem in more accurate and better manner.
- ❑ It consists of collecting , analyzing , linking , connecting and mixing the two data forms viz. quantitative and qualitative .
- ❑ Since there are two different forms of databases , the research worker needs to decide on the sequence of data collection and also on the priority or emphasis.
- ❑ The most crucial decision would be related to the “ mixing” of the data.
- ❑ Integrating the data during data collection, analysis or discussion .



# NEED OF MIXED METHOD -

- ▶ Validate findings using Quantitative and Qualitative data sources .
- ▶ Use Qualitative data to explore quantitative findings .
- ▶ Developed survey instruments .
- ▶ Use Qualitative data to augment a quantitative outcomes study .
- ▶ Involve community - based stakeholders .

# TYPES OF MIXED METHOD -

- **Sequential explanatory design**
- **Sequential exploratory design**
- **Concurrent triangulation**
- **Concurrent nested**

# ADVANTAGES OF MIXED METHODS -

- ▶ Compares quantitative and qualitative data .
- ▶ Reflects participant's point of view .
- ▶ Fosters scholarly interaction .
- ▶ Provides methodological flexibility .
- ▶ Collects rich , comprehensive data .

# LIMITATIONS OF MIXED METHOD -

- ▶ Increases the complexity of Evaluations.
- ▶ Relies ( Require / depend ) on a multi-disciplinary team of researchers.
- ▶ Requires increased the resources.

## 1.5 NEED AND IMPORTANCE OF QUALITATIVE RESEARCH IN THE FIELD OF EDUCATION -

- ▶ **Home work on Unit No. 1-**
- ▶ This topic is for self study.
- ▶ All of you should write need and importance of Qualitative Research in the field of Education.