CHAPTER - 4

RESEARCH METHODOLOGY
4.1 INTRODUCTION:

The most commonly used methodology of research in education has been the positivist inquiry. This approach claimed to establish cause-effect type of correlations between variables and such relations are transformed into generalization. But, the contextual framework of these findings is overlooked in it. The objective generalizations are hopefully declared as universal. The positivist educational research seems to exclude the most important factor of the unique perspectivity and humanness of the Man in Context.

The limitations of the behaviouristic approach of research where in the investigator deliberately chooses the research process in advance. The researcher determines and controls all the aspects of researches, but manipulated data of human beings are not the same as the real natural behaviour of a man in the field.

Many of the experimental designs followed so long by positivist have concentrated on formal test of hypotheses, using particular statistical procedures and arriving some conclusions but it becomes only general study and does not permit a more comprehensive study.

Social phenomena have dynamic nature and independence of human behaviour. The known factors are very difficult to be controlled, because various causes are interwoven and a number of variables are at working. It is impossible to entangle and straighten out the network of causes. Human being is an organism who functions under a variety of contexts, and in many of other areas of educational processes linear causality could not exist.

The operationalism makes the research process hollow, resulting into meaningless slicing of the existing world. In the process of defining the terms operationally, the researcher limits the meaning of the terms equivalent to the measuring tools used in the research. Thus everything gets reduced to the structural framework. Despite the good intentions of the researchers, the findings cannot get reduced to the mechanism environment.

The knower (researcher) and the known (subject) cannot be separated; no tangible reality exists in the human world, which can be broken into pieces. It
is therefore necessary to accept alternate and complementary approaches and techniques of research.

There is a need to explore new approaches to research such as symbolic, interaction, phenomology, phenomenography, ethno methodology and ethnography. The qualitative research techniques like focus group discussion (FGD), individual in depth interview (IIT), participant observation (POB) etc. are applied in studies of education.

The new pursuit of the new paradigm has been the most comprehensively applied to knowledge generation and research in the field of education by Egon Guba and Yvonna Lincoln. This new paradigm has originally explicated by Guba and Lincoln as the naturalistic paradigm.

It is also true that in recent years they have referred the term 'constructivist' to 'naturalistic' because of several implications of the term.

Generally, the context decides perceptions of a person. In naturalistic inquiry, the researcher believes that structural research tools cannot account for the totality of beliefs and actions of the respondents. The tacit knowledge can be collected through human instruments only. Some obtrusive, non-verbal and apparently extraneous behaviour of the respondents add 'reality' to the study. In naturalistic inquiry, the researcher can explore their, tacit and non-verbal meanings according to the context situations.

In naturalistic inquiry, realities being multiple, evolving and diverse, uniform application of findings need not and cannot be made. Its findings may be applicable elsewhere depending upon the existence of similarities of context.

Naturalistic Inquiry is used whenever man is taken as individual and not as a variable. Multiple realities emerging in the process of mutual shaping is explained with the help of naturalistic inquiry. Educational reality is not fixed like that of a physical entity lying there outside the mind.

Naturalistic Inquiry is helpful in this study to find out real perceptions and to find out actual behaviors of teachers in the classroom.
4.2 DIFFERENCE BETWEEN CONVENTIONAL THEORIES AND
NATURALISTIC INQUIRY:

The conventional theories are single objective realities while in Naturalistic Inquiry all bits of reality are pieces of total reality. The reality of this new paradigm is like whole cloth. All aspects of reality are interrelated. According to Guba [1981: 77, 78] "if one attempts to focus attention on certain portions of reality only, the whole falls apart as though the cloth had been cut with scissors."

It means there is not a single objective reality but multiple realities.

Traditionally science has been considered to have two complementary aspects: one is discovery and second is verification. Erlandson and others believe that [1993: 36], "it seems that Kerlinger attempts to do is to assign the discovery role to the naturalistic researcher and to reserve verification for traditional research." But Naturalistic Inquiry does not possess any one of aspects, but naturalistic researcher intervenes both aspects with each other and cannot easily be contained in separate time or activity segment. In short Naturalistic Inquiry has both aspects discovery and verification.

Variables are important factor in conventional method. Traditional researcher used variables and tried to generalize, but Naturalistic researcher never tries to generalize with the help of variables because they believe that real problems always appear in particular context. The researcher of Naturalistic Inquiry does not try to solve the problem by generalization but find solution through context.

Difference between traditional and naturalistic construction is also in data collection. Researcher of traditional inquiry collects data without becoming aware of what they revealed while Naturalistic Inquiry includes interactive and often simultaneously data collection. The traditional researcher knows before data collection begins exactly what data will be collected, how they will be stored and how they will be retrieved. Although naturalistic inquirer has not this facility, tentative design will provide direction for subsequent data collection and analysis.
The main difference is about design of both methods. Conventional paradigm uses a priori design while Naturalistic Inquiry uses an emergent design. Design of Naturalistic Inquiry is more complex and more flexible than conventional research design. The complexity of a naturalistic design is impossible to predict with any precision; it can be described after the study has been completed. Conventional researcher can decide about the design in a given situation. The naturalistic researcher recognizes the complexity of the context and allows structure to build only as his or her understanding of that context and of the respondent's constructions of reality allows the design to emerge. Prior decisions about particular variables and data collection are possible only in conventional method. The researcher using Naturalistic Inquiry can make no such decisions. In Naturalistic Inquiry it is necessary to plan for anticipated circumstances but decisions are left on the context of time, place and human interaction. By showing the difference of design in both paradigm, Erlandson and others compare conventional research design with 'black box' research. In this method researcher can specify in advance what instrument will be used, at what points and with whom. While naturalistic researcher climbs inside the black box and choose respondents for qualities related to the research. In short emerging process is fundamental to Naturalistic Inquiry and conventional paradigm uses a priori design.

Conventional research separates inquirer from the object of inquiry. Naturalistic researcher tries to get inside the social context and to share constructed realities in the context and to construct new realities.

Hypothesis is also one of the factors of traditional inquiry. Naturalistic Inquiry does not work with the help of hypothesis but there are research questions in Naturalistic Inquiry and researcher tries to get answers to these questions.

In traditional inquiry, data analysis is done after data collection. But in Naturalistic Inquiry collection of data and its analysis is both are interactive processes. Researcher collects data and analyses them, then decide about which data are necessary then again analyses it. Thus as soon as data are obtained, analysis begins.
Conventional study suggests its trustworthiness through providing internal validity. It provides truth-value through control and randomization, through external validity as randomization sampling. It provides consistency through reliability and neutrality through objectivity while in Naturalistic Inquiry alternative techniques support truth-value, applicability, consistency and neutrality.

4.1 IMPORTANT FACTORS OF NATURALISTIC INQUIRY:

(1) Importance of Context:

Naturalistic Inquiry is dependent upon context. The fundamental assumption of Naturalistic Inquiry is that all the subjects of an inquiry are found together by a complex web of unique interrelationship. As Erlandson [1992: 66-74] pointed out that context provides great power for understanding and making predictions about social settings.

(2) Importance of Language:

Language is precious for Naturalistic Inquiry. It affords a repository of the concepts that a person can use to organize his or her world and provides the tools with which a person can structure experience. Language is cultural phenomenon and it links people in the same culture and other culture. Naturalistic Inquiry is based on social settings, so language is a very useful factor. If word and word structure did not construct reality, it would be useless.

(3) The Design of Naturalistic Inquiry:

The design of a study leads a researcher to give order to some set of phenomena. Naturalistic Inquiry is different from conventional theories at this point of design. Naturalistic Inquirer recognizes human setting, goes into the setting with only as much as he or she believes is faithful to the context. Researcher has no prior design. At first researcher finds a rough focus for study and begins looking for a site and a design is beginning to emerge and design is open to change.

Thus design is usually not fully established before the study begins but emerges as data are collected and preliminary analysis is conducted and the context becomes more fully described. Once the study has begun, the design of
naturalistic study continues to emerge. As the researcher gets deeper and deeper, early questions working hypotheses help in getting started. The Naturalistic Inquiry will have research questions but not definitive hypotheses.

Thus emergent, tentative design is helpful to reach near the reality. Naturalistic Inquiry aims to discover realities so it requires flexible, open-ended process for study.

(4) Data Collection:

The method of data collection is also different in Naturalistic Inquiry than conventional studies. The primary purpose of gathering data in naturalistic inquiry is to gain the ability to construct reality in ways that are consistent and compatible with the constructions of a setting's inhabitants.

Naturalistic researcher can gather data from a variety of sources and from different ways. Researcher is asked questions and observed their daily activities. He or she also can get data from documents. There are basically four general sources that the researcher utilizes in naturalistic inquiry and they are interviews, observations, documents and artifacts.

Generally interview means one person asking questions and other answering. But in Naturalistic Inquiry interviews take form of a dialogue or interaction. In Naturalistic Inquiry interview is informal, like a causal conversation.

The second source of data collection in Naturalistic Inquiry is observation. Observations like interviews in unstructured forms. Not only observation but participatory observation is true word for it. Sometimes it is impossible to observe and record everything in a setting and therefore sometimes some type of plan is also necessary.

Documents are a third source of evidence. The term documents refers to the broad range of written symbolic records, as well as any available materials and data.

Naturalistic researcher can also accept artifacts. It can be technological device.
Interviews, observation and documents and artifacts bring together multiple perspectives and allow the researcher to better understand the whole, the essence, through the use of his or her senses.

(5) Purposive Sampling:

Purposive sampling is central to Naturalistic Inquiry. Naturalistic Inquiry does not generalize the findings of the study to a broad population or universe. Researcher who uses Naturalistic Inquiry tries to maximize discovery the heterogeneous patterns and problems that occur in a particular context.

Purposive Sampling increases the range of data exposed through human instrumentation.

The basic rule of Naturalistic Inquiry is there are no rules of sample size. In Naturalistic Inquiry researcher is looking more for quality than quantity, more for information richness than information volume and at that point purposive sampling is considered a proper method.

The procedure of purposive sampling also depends on emergent design rather than a priori design.

Erlandson and others [1993:148] rightly said, “The decision to stop the sampling process is made when redundancy of information occurs, not when a statistical confidence level is reached.”

Purposive sampling requires a procedure that is governed by emerging insights about what is relevant to the study.

(6) Credibility:

A central question for any inquiry relates to the degree of confidence in the truth. Naturalistic Inquiry described truth value in terms of internal validity that is the isomorphic relationship between the data of an inquiry and the phenomena those data represent.

Naturalistic Inquiry does not make the assumption of a single objective reality; the objective ascertainment of an isomorphism ceases to have any relevance. More pertinent is the compatibility of the constructed realities that
exist in the minds of the inquiry's respondents with those that are attributed to them. This relationship is termed credibility.

(7) Trustworthiness:

Trustworthiness means valid inquiry. It demonstrates its truth-value and allow for external judgements to be made about the consistency of its procedure. Trustworthiness means the neutrality of its findings or decisions.

Trustworthiness is established in naturalistic inquiry by the use of techniques that provide truth-values through credibility, applicability through dependability and neutrality through confirmability.

In Naturalistic Inquiry there are many techniques that provide trustworthiness such as prolonged engagement, persistent observation, triangulation, referential adequacy material, peer debriefing, number checking, the reflexive journal, thick description, purposive sampling, audit trial etc.

(8) Thick Description:

Thick Description is also important factor for Naturalistic Inquiry. It will bring reader vicariously into the setting. By description of specific sights, sounds and relationships the scene is created in reader's mind. Sometimes it may be remarkably close to that which would be gained by direct experience. Description of interaction will also be part of the thick description. Lincoln and Guba [1985:125] state that the description must specify everything that a reader may need to know in order to understand the findings. [Findings are not part of thick description...]. They suggest that the inquirer provide the widest possible range of information in the thick description through purposive sampling.

(9) Prolonged Engagement:

This technique helps to establish the truth-value or credibility in Naturalistic Inquiry. Enough time in the context enables the researcher to daily events in the way that persons who are part of that context interrupt them. The researcher's prolonged engagement lead to overcome the distortions that are due to his/her impact on the context and his/her own biases and effect of unusual and seasonal event.
(10) **Persistent Observation:**

While prolonged engagement serves to temper distortion caused by the researcher's presence, persistent observation in Naturalistic Inquiry accentuates that presence by actively seeking out sources of data identified by the researcher's emergent design. Lincoln and Guba [1985:304] says, "If prolonged engagement provides scope, persistent observation provide depth."

Lightfoot [1983] refers to persistent observation as dependent on the researcher's ability to seize the moment and take personal risks.

Persistent Observation is not passive but it contains a strong sense of purposefulness and assertiveness on the part of the researcher.

(11) **Participatory Observation:**

Human beings behave differently when they know they are being studied. Everyday life is important in participant observation. In Naturalistic Inquiry, researcher participates and observes in everyday life situation. When a person take a role of participant observer, it is necessary for him/her to conduct as unobtrusive observation. Observer must be involved with setting and it must lead towards reality.

(12) **Triangulation:**

Triangulation means multiple sources of data [time, space, person], methods [observations, interviews....], investigators [single or multiple] and theory.

It leads toward credibility in Naturalistic Inquiry. People of context possess different opinions and understanding of a topic. But different questions, different sources and different methods are focused on equivalent data. It is useful to collect information about different events and relationship of different points of view. Lincoln and Guba [referred in Erlandson, Harris and Others (1993:138)] suggest, "Each piece of information in the study should be expanded by at least one other source such as a second interview or a second method. Single items of information contribute little to an understanding of the context of the study unless they are enriched through triangulation."
In short triangulation of multiple data, sources, methods, investigators or theories lead towards the confidence in the observed findings in Naturalistic Inquiry.

(13) Peer Debriefing:

Peer debriefer is important factor in Naturalistic Inquiry because sometimes it helps to build credibility. Peer who is a professional outside the context and who has some general understanding of the study. He/she analyses material, tests working hypotheses, emerging designs and leads the research towards credibility.

(14) Referential Adequacy Material:

Referential adequacy material support credibility in Naturalistic Inquiry by providing context, rich, holistic materials. It can support data analysis and interpretations. These materials may be obtained through both obtrusive and unobtrusive measures. Obtrusive measures tend to some degree on the environment. It includes photographing, videotaping and tape recording done by researcher. Unobtrusive measures include collection and review of catalogue, newspapers, yearbooks etc. All of these referential adequacy materials help to provide a slice of life that can be invaluable to the researcher in understanding the context of an organization.

(15) Member Checking:

According to Lincoln and Guba this technique is the most important in establishing credibility. Member checking provides for credibility by allowing members of stake holding groups to test categories, interpretations and conclusions. They have a chance to indicate whether the reconstructions of the inquirer are recognizable. Member checking does not mean triangulation, but member checking is carried out in regard to the constructions from the triangulated data. Sometimes member checking can be misleading if all the members share some common myth or conspire to mislead.
(16) **Researcher Himself/Herself:**

Most important is the fact that the researcher himself or herself becomes the most significant factor and instrument in Naturalistic Inquiry. Relaying all his/her senses, intuition, thoughts and feelings, human instrument can be a very potent and perspective tool.

All instruments interact with respondents and object but that only the human instrument is capable of grasping and evaluating the meaning of that differential interaction. Lightfoot [1983:370] stated that in qualitative research "the person is the research tool, the perceiver, the selector, the interpreter and the guard against distortions, bias and prejudice". In addition she said [1983:377] that researcher "listens and accepts, but is not controlled, enhanced or diminished by others' perceptions or judgements."

(17) **Data Analysis:**

Data Analysis is also as important process in Naturalistic Inquiry. In Naturalistic Inquiry data from all those sources are brought together and systematically analysed in a process that parallels to data collection. Data are collected and analysed in an interactive process. As soon as data are obtained, tentative meaning is applied to them. When new data are obtained the meaning revised.

**4.4 POPULATION:**

It is necessary for every researcher that he or she thinks about population, when he/she is going to prepare for data collection. It is seldom possible to collect data from every person in the population. It is not impossible but very difficult to collect data from each person that goes to make up population.

Population is a group of people, incidents or things from which researcher selects a sample for research. Hills, P. J. [1982:220] also rightly said that the term population is a sampling word used to refer to a well-known defined group of people, objects or events and there is no implication of size. With the help of population researcher can select sample. It consists of the complete set of observations or measurements about which a person would like to draw
conclusions. Best, John. W. and Khan, James. V. [1992:11] believe that a population is any group of individuals that have one or more characteristics in common that are to interest to the researcher. The population may be all the individuals of a particular type or a more restricted part of that group. In short population means total number of people in a definable group.

This research is a study of perceptions of teachers. It is impossible to study a large number of teachers. The teachers of secondary and higher secondary sections of Anand and Kheda district make the population of this study. Principals of secondary and higher secondary sections of Nadiad and Anand district are also considered as teachers.

Entire set of entities or events that are relevant to the subjects of enquiry is called population. In this study population is relevant with subject of research and with the help of this population selection of sampling has become easy.

4.5 SAMPLE:

The primary purpose of research is to discover principles that have wider application, but study a whole population to arrive at generalization would be impracticable. Some populations are so large that all characteristics cannot be measure. To solve this difficulty sampling is considered the best way. So the researcher selects sample from the population and studies the sample and result is generalized for whole population.

A Students Dictionary of Psychology [reprinted in 1991:166] suggests, "Sample is a part of a population which is studied so that the researcher can make generalization about the whole of the original population." A sample is a small proportion of a population selected for observation and analysis. By observing the characteristics one can make certain inferences about the characteristics of the population from which it is drawn. A Dictionary of Education [1981:261,262] also suggest that sample is a statistical term for a group selected from some larger group [the population] with a view to using what is discovered about that sample to make inferences about the population as a whole.

It can be gathered by means of several different procedures, which include random sampling, systematic sampling, stratified random sample, double
sampling, sequential sampling, incidental sampling, multistage sample, cluster sampling, purposive sampling and others.

This study is based on quantitative as well as qualitative methods. So method of sampling selected here is cluster sampling. In this method sample is a group of characters or a cluster. This cluster sample or area sample is a variation of the simple random sample that is particularly appropriate when the population of interest is infinite, when a list of members of the population does not exist or when the geographic distribution of the individuals is widely scattered.

This research is a study of teachers of Anand and Nadiad district. There are about 500 schools in these districts. So there is a large number of teachers in 500 schools. It is difficult to select all the teachers of population. So cluster random sampling method becomes useful for this study.

From the 500 schools of Anand and Nadiad districts some schools of rural, urban and semi urban (town) area were selected and all teachers of these schools were selected as sample of the study. Initially 338 teachers were considered as the sample of this study. They were given 'Teaching Learning Perception Inventory'. Unfortunately because of incomplete information provided in the inventories 250 teachers were retained as the final sample of this study. Samples from different areas are as under.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Area</th>
<th>Number of teachers from different area</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>Rural</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Semi Urban (town)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 %</td>
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<tr>
<td></td>
<td></td>
<td>40 %</td>
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<td></td>
<td></td>
<td>20 %</td>
</tr>
</tbody>
</table>

Table 4.1
Description of the Sample
After analysis of responses on inventories of 250 teachers were selected as the main sample. The teachers who gave extreme responses, higher and lower were selected as the sample of observation and interviews. Naturalistic Inquiry also supports this method. According to Erlandson, Harris and others [1993:67], “The naturalistic researcher will need to consider how data will be analysed after they have been gathered in order to make certain that he or she collects data in such a way that they are usable. Thus on the basis of scores assigned to the responses on the main inventory, the researcher selected the second level of samples. Out of 250 teachers in the first level sample, 25 teachers having very high scores and very low scores were identified. These 25 teachers were selected for classroom observation. It means 10% of the samples was selected. Two periods of each teacher was observed, so 50 lessons were observed and information was collected on ‘Classroom Observation Inventory’.

The same teachers [25 teachers] means 10% of samples were also interviewed for indepth study.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Number of teachers from different area for observation and interviews</th>
<th>Percentage of teachers from different area for observation and interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>100</td>
<td>12</td>
</tr>
<tr>
<td>Urban</td>
<td>100</td>
<td>8</td>
</tr>
<tr>
<td>Town</td>
<td>50</td>
<td>5</td>
</tr>
</tbody>
</table>

4.6 TOOL CONSTRUCTION:

To carry out any type of research, it is necessary to gather data. Various methods and procedures have been developed to help in the acquisition of data. Tools are very useful to study the data. Best, John. and Khan, James. [1992:159] describe words of late Arvil S. Barr – University of Wisconsin teacher and researcher who wanted to explain importance of tools in research
and asked, “which is better a hammer or a handsaw? Like the tools in the carpenter’s chest, each is appropriate in a given situation.”

There are types of tools which are helpful to collect data, for example questionnaire, rating scale, documents, artifacts, interview, observation, psychological tests, inventories, aptitude tests, achievement tests and others. Researcher tests available tools and selects for the study. It is also true that if researcher thinks that available tools are not proper for his/her study, he/she should prepare own tools. It is important to select or prepare a proper tool according to objectives of research.

For this study about the perceptions of teachers, we have opted to utilize quantitative as well as qualitative methods. So it was necessary for researcher to prepare inventories to have numerical information and to develop a Classroom Observation Inventory and an interview schedule to capture qualitative aspect of perceptions.

1. **Teaching Learning Perception Inventory [TLPI]**:

This research is a study to teachers’ perceptions towards teaching and learning practice. Sometimes a rigid tool fails to capture the perceptions of teachers because the perceptions are tacit, deep rooted and disarrayed. We therefore very carefully devised an inventory which is commensurate with the nature of perceptions.

With this view, initially 11 open-ended questions were prepared about teaching and learning. For example,

1. Which are the most enjoyable moments for you in the classroom?
2. When do you feel frustrated in the classroom?
3. Which activities form the core of teaching-learning process?
4. When do you feel that ‘students are learning sincerely’ during your class?
5. Enlist the factors affecting learning. Give your priority number.
6. When do you feel contented about your teaching?
7. What measures do you take for making your teaching successful?
8. Which activities of students are obstacles for their learning process?
9. When do you feel that your efforts are not effective during classroom activities?
10. When do students become enthusiastic during the learning process? Which important activities of yours induce them towards learning?
11. What are the circumstances that make you angry during teaching?

Questions were also prepared to know about teachers' feelings like frustration, happiness and anger in the classroom.

This list of 11 questions was given to the actual practitioners in the field, i.e., teachers. They were asked to answer these questions in details. The researcher conducted personal meetings with them to pinpoint the answers and have more informal and valid responses about the areas covered by the questions.

The information thus generated became the realistic source of the raw material for preparing the main inventory.

After analysis of information that was collected, 'Perception Inventory' was prepared which included 178 statements in 12 main divisions.

(a) Validation Through Experts' Opinions:

This form of inventory was sent to 5 experts in the field of teacher education and schools. They were requested to mark statements as negative or positive, to state whether the statement was valid or not and whether it should be retained or not. The experts were also asked to comment on the statements, to improve the construction and even to suggest new statements. After analysis of their responses and suggestions some sentences omitted, some were changed.

(b) The Pilot-form of the Inventory:

The Teaching Learning Perception Inventory was ready for the pilot study after experts' opinions. This inventory consists of 100 statements with 10 divisions. Teaching Learning Perception Inventory was given to 24 teachers of Alarsa, Vaso (rural area) and Nadiad (city area) for pilot study. When collecting these inventories they were also asked some questions about statements of inventory and suggestions about inventory etc. After analysis of the statements and considering suggestions the sequence of statements, pattern of statements,
formation of statements and other changes were made. Thus Teaching Learning Perception Inventory (TLPI) was reconstructed for final study. Final form of inventory consists 100 sentences on 10 aspects of teaching learning practice.

These 10 aspects consists titles as,

1. Harmony between theoretical and practical aspects.
2. Teaching situation-observations and experiences.
4. Perceptions of teacher and students competence.
5. Influencing factors (outside the school).
10. Happy and unhappy events in the class.

At the end of each part some space is given to write suggestions regarding that particular division. Variables like name of school, teachers' teaching subjects, their qualifications, gender, their experience, name of village or city were helpful to know personal information about teachers. With a view to gather real and reliable information the space for teachers' name is not given. There is also name of topic and suggestions to fill the inventory on the front page. [see appendix].

2. Classroom Observation Inventory [COI]:

In quantitative data gathering and analysis, it is necessary to give attention towards social and natural dimension of a particular sample. In order to obtain this holistic qualitative portrayal each case, site is treated as unique entity with its own particular meaning. In this study Naturalistic Inquiry leads towards to know real perceptions of teachers towards teaching learning practice. It was necessary to observe teachers' teaching practice and behaviour too in the classroom. In fact observation begins that moment when investigator makes contact with a potential field setting. But it is necessary for the researcher to make
classroom observation schedule which can be helpful to mark observed details during classroom.

Marshall and Rossman advocated the importance of observation in Naturalistic Inquiry. They [1989:79] defined the observation as “the systematic description of events, behaviours and artifact in the social setting chosen for study.” Jorgenson, Danny. L. [1989:82] said, “It is extremely important that you record observation as immediately as possible and with the greatest possible detail because never again will you experience the setting as so utterly unfamiliar.”

Thus it is very important to record details. So ‘Classroom Observation Inventory’ was prepared. To construct this inventory analysis of TLPI is helpful. There are some questions in COI about teaching learning practice and behaviour of teachers. Researcher has observed two periods of two teachers of Alarsa High School. Some changes were done. Then three periods of Joshikuva High School were observed, and changes were done. In this way, necessary changes were done after piloting of five teachers. The final tool for this study consists 10 main aspects related to perceptions of TLPI. Some statements seek only affirmative and negative responses and some statements seek descriptive and other non-verbal information. This tool is used during classroom observation. (recorded classroom observation inventory is in appendix)

3. Interview Schedule [IS] :

In naturalistic research, interview takes more of the form of a dialogue or an interaction. But prepared questions are very helpful to ask probe-questions. Some questions were prepared to cover topics like concept and process, efforts of teachers, admiration and criticism of teachers, feelings and role of teachers. At first one teacher of Vaso (rural area) was interviewed and some necessary changes were done in prepared questions. Then two teachers of Joshikuva (rural area) were interviewed whose periods were observed.

After analysis of their answers and non-verbal expressions some topics and order of the topics were changed. Finally, 11 main questions were retained for final study. (see appendix for 11 main questions for interviews) This tool enabled the researcher to note down some responses during the interviews.
The questions for interview are quite informal and open ended. On the spot questions and probing questions were also asked. This interview looked like free conversation and not like a formal interview. Non-verbal responses were also written for more valid information.

4. Researcher is Key Tool:

In naturalistic inquiry researcher is the key tool, the authentic recorder. Here researcher tried to become such a tool during observations and interviews. Researcher tries to hear conversations in the staff-room about the school and try to converse with teachers about the school, students and teaching learning practice.

The tools, including the researcher, thus became instrumental in reaching the perceptions of the teachers.

4.7 DATA COLLECTION:

Without data there is no ground for investigation. Quantitative and qualitative both methods are used in this study. Data are the core of the science of statistics. In order to apply statistical method, any type of inquiry, it is necessary that statistical data be collected because no statistical analysis is possible in the absence of quantitative data. Therefore it becomes essential at the first hand to collect facts and figures.

Data collection was done from the secondary schools and higher secondary schools of Anand and Kheda district. A list of schools of Anand and Kheda district was useful for data collection. With the help of this list 'Teaching Learning Perception Inventory' was administered to 338 teachers of rural, urban and semi urban (town) area. There was a personal meeting and information for filling the inventories was given. Teachers were given 10 to 15 days to respond to the statements in the inventory. After 10 to 15 days these inventories were collected back. The researcher could collect 287 inventories from 338. Only 250 inventories were considered for the final study because some of the inventories had insufficient information. The primary purpose of gathering data in Naturalistic Inquiry is to gain the ability to construct reality in ways that are consistent and compatible with the constructions of setting inhabitants. So interview and classroom observation were
performed after analysis of ‘Teaching Learning Perception Inventory’. The researcher stayed for a day in the school and observed two classes of each teacher. Thus 50 classes of 25 teachers were observed. The teachers were also interviewed on the same day. She took down the account of interview and observation. The methodology of observation and interview were flexible. Erlandson, Harris and others [1993: 85] rightly said, “Many think of interviews as one person (i.e., the researcher) asking questions and other answering. However in Naturalistic Inquiry interviews take more of the form of dialogue and interaction.” This study is also based on Naturalistic Inquiry procedure. So interview is looked like free conversation. These are not formal interviews. Fatterman [1989: 49] explains, “The questions typically emerge from the conversation. In some cases they are serendipitous and result from comments by the participant. In most cases the researcher has a series of questions to ask the participant and will wait for the most appropriate time to ask them during the conversation.” In this study also researcher take the support of IS (Interview Schedule) but it is informal and open-ended interviews. Non-verbal signs communicated by the teachers to support their views were also considered carefully and noted down.

Observations of 50 classes of 25 teachers were performed. Interview allows the researcher to travel, as it were back and forth in time, observation allows the researcher to discover the here and now inter working of the environment. Guba and Lincoln [1981:193] says about observation that, “... in a real sense observation permits the observer to use himself as a data source and observation ... allow the observer to build on tacit knowledge ...”. In this study with the help of COI (Classroom Observation Inventory) researcher tried to become data stimulant to elicit their beliefs, interests, unconscious behaviour and non-verbal expressions.

Not only observation and interviews were performed but the researcher sat with teachers of same school during recess time and free periods and heard their conversation about teachers, school, students and their learning ability and tried to trigger the discussion about this topic. The researcher wrote down all these information for this study.

Thus during data collection she tried to involve respondents because the goal of the researcher was to get behind the data being collected and to see through them the constructed realities of the respondent.
4.8 DATA ANALYSIS:

Data in this study is collected through three prepared tools. The data are quantitative as well as qualitative both. So various techniques were used to analyse the data.

1. Quantitative Techniques:

Statistics is a technique for analyzing numerical data. Statistics is considered a basic tool for measurement in quantitative data. This study also utilizes quantitative technique. The 'Teaching Learning Perception Inventory' (TLPI) comprises of statements to be rated on a five point scale ranging from 'strongly agree to strongly disagree'. There were positively as well as negatively loaded ones. The inventory has 100 statements distributed over 10 sections. At the end of each section a blank space was provided for open-ended responses.

The statement in 'Teaching Learning Perception Inventory' was scored following the statistical procedure (scores 5,4,3,2,1 for positively loaded statements and 1,2,3,4,5 for negatively loaded statements). There after the technique of chi-square was applied to find out the accidency of responses. The interpretations were made by comparing the obtained chi-square values with respective table value.

Null hypotheses were examined with the help of 't' test.

The data was obtained in the form of open-ended responses in the 'Teaching Learning Perception Inventory' (TLPI) were divided into ten aspects of TLPI. The essence of each response was focused. Then frequencies were marked in descending order and the sentences were arranged.

2. Qualitative Techniques:

Qualitative Techniques differ in method of analysis from traditional techniques. Naturalistic researcher does not know in advance how the data will be stored, what data will be collected and how it will be analysed. In this technique data collection and analysis both are interactive processes. The analysis of qualitative data is best described as a progression, not a stage; an ongoing process, not a one-time event.
Data on the Classroom Observation Inventory [COI]

To analyse the data of affirmative and negative statements in COI, frequencies were marked against each affirmative and negative sentence. The descriptive and non-verbal responses on COI were interpreted relating to main aspects of TLPI, marked by frequencies.

Data from Interview

The data from informal interviews were analysed with the help of matrix of analysis following qualitative research method. The essence of conversation with teachers was sensed and divided into aspects of teaching learning like; education and role of teachers, concept and practice of effecting classroom teaching, perceptions regarding affecting factors, praise and criticism of teachers and students, emotion of teachers. The perceptions of teachers were marked with the help of frequency. The words of teachers which highlight teaching learning practice were written according to the aspects of teaching and learning. Data which were obtained in the form of non-verbal responses were written according to related aspects of teaching and learning. Some miscellaneous quotations also written.

The Over-heard Conversation

The over-heard conversation of teachers related to school, students and teaching learning process during recess and free periods were written. The main points, which emerged from conversation with teachers, were also written.

Thus in this study data from all these sources are brought together and systematically analysed in process that proceeds parallel to data collection. Erlandson and others [1993:130] rightly said, “Analysis is a rich, broad, wonderful activity that, perhaps more than any other aspect of naturalistic research celebrates the link between the researcher and the setting being studied.”

In Quantitative technique it is sometimes hard to distinguish between when the data collection ends and when the analysis begins. In the same way analysis of data in this study became complementary, ongoing and often simultaneous processes.