UNIT 3 KNOWLEDGE GENERATION: HISTORICAL PERSPECTIVE-II

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3.1 INTRODUCTION

In Unit 2, the earlier phase of knowledge generation process has been presented in a historical perspective. The later phase of this process will be dealt with in this unit. Knowledge generation through the scientific approach had a powerful impact on viewing the natural environment and improving the conditions of social life, consequently newer fields of study started coming up. Anecdotal records and projective techniques originated within the framework of scientific approach vis-à-vis this positivistic paradigm. In course of time, non-positivistic paradigm was becoming gradually more visible in social sciences and humanities in terms of meaning and interpretation of verbal behaviour, phenomenology, etc. This paradigm made many concepts and constructs, namely, objectivity, generalization, status of knowledge, nature of reality, etc look suspect. Education, having both the perspectives, cannot but recognize the emergence of such trends. Activities, processes, structures and phenomena in education, which is a very diverse field, got evolved through time. That is why educational scenario changes from time to time. Quite reasonable, therefore, that the studies visualized in education can be of varied kinds, like: relationships, developmental and understanding, rather than explanation and prediction.

These studies in education can be conducted meaningfully by utilizing varied perspectives of research. In an action situation, even a combination of paradigms may be relevant sometimes. This is what constitutes the content of this unit.

3.2 OBJECTIVES

After having studied this unit, you will be able to :

- discuss the meaning and the limitations of the positivistic paradigm (i.e. scientific approach).
- describe the new developments in social sciences and in education in terms of emergence of new areas of study, new concepts, constructs and new paradigm.
- understand the non-positivistic paradigm, e.g. phenomenological approach.
- appreciate that education has both the positivistic and phenomenological perspectives.
- understand that studies in education can be varied e.g. relationship, developmental and understanding type.
- realize that research in education may need to combine varied paradigms.

3.3 POSITIVISTIC PARADIGM

In order to explicate positivistic paradigm we have first to understand what a paradigm is. This term was introduced in 1962 by Thomas Kuhn in his book, "The Structure of Scientific Revolution",. The concept has turned out to be useful in inspiring critical thinking about 'Sciences' and the way shifts in basic scientific thinking occur. A paradigm determines the criteria according to which one selects and defines problems for inquiry. A paradigm determines scientific approaches and procedures which stand out as exemplary to a new generation of scientists – as long as they do not oppose it. Kuhn characterizes a paradigm as: "An integrated cluster of substantive concepts, variables and problems attached with corresponding methodological approaches and tools..... A paradigm gathers into itself a community of investigators. By sharing information within itself, this community gives itself intellectual and social support. It tends not to communicate with investigators who follow different paradigms. Citation of other's work is frequent within a paradigm but much less frequent, perhaps non-existent across paradigms. Hence, the followers of a paradigm tend to have their own journals, scientific societies, and meetings, because the paradigm has won their allegiance to an integrated set of concepts, variables, problems, and methods."

A 'revolution' in the world of scientific paradigms occurs when one or several researchers at a given time encounter anomalies, for instance, make observations, which in a striking way do not fit the prevailing paradigm. Such anomalies can give rise to a crisis after which the universe under study is perceived in an entirely new light. Previous theories and facts become subject to thorough rethinking and re-evaluation.

Positivistic paradigm of knowledge generation is based on the philosophical ideas of the French philosopher, Auguste Comte, who turned to observation and reason as means of understanding behaviour. More simply, explanation proceeded by way of scientific description, it was Comte who consciously 'invented' the new science of society and gave it the name 'Sociology'. He thought that it would be possible to establish it on a 'positive' basis, just like the other sciences, which served as necessary preliminaries to it. For social phenomena were to be viewed in the light of physiological (or biological) laws and theories and investigated empirically, just like physical phenomena. Likewise, biological phenomena were to be viewed in the light of chemical laws and theories; and so on down the line.

Comte's position was to lead to a general doctrine of positivism which held that all genuine knowledge is based on sense experience and can only be advanced by means of observation and experiment. Following in the empiricist tradition, it limited enquiry and belief to what can be firmly established and in thus abandoning metaphysical and speculative attempts to gain knowledge by reason alone. Positivist paradigm developed what has been described as a 'tough-minded orientation to facts and natural phenomena'.

3.3.1 Aspects of Positivistic Paradigm

Positivistic paradigm has been defined in the last section. But its special features need to be explained. This is what follows.

Difficulty in Precise Meaning

Not only Comte but also many other scholars such as Bacon, Mill, Hume as well as the scholars of 'Vienna Circle' contributed to the development of the concept of positivistic paradigm. It is, therefore, difficult to assign it a very precise and consistent meaning. The term has also been applied to the doctrine of a school of philosophy known as 'logical positivism', originated by the scholars of Vienna Circle. Logical positivists hold that the meaning of a statement is, or is given by the method of its verification; unverifiable statements are, therefore, meaningless.

Assumptions Behind Positivistic Paradigm

Positivism derives its meaning from an acceptance of natural science as the paradigm of human knowledge. This has led to the development of the **scientific method** as a means of knowledge generation. Positivistic paradigm has, therefore, to be understood within the total framework of the principles and assumptions of Science.

First, there is the assumption of determinism, according to which events have causes and are determined by other circumstances; these causal links can eventually be uncovered and understood, and that the events are explicable in terms of their antecedents. The universe does not behave capriciously. It is the ultimate aim of the scientists to formulate laws to account for the happenings in the world around them, obtaining thereby a firm basis for prediction and control.

The second assumption is that of empiricism, which holds that certain kinds of reliable knowledge can only originate in experience which scientifically means that acceptance of a theory or hypothesis depends on the nature of empirical evidence for its support; 'empirical' here means that which is verifiable by observation. The viewpoint on empiricism may be summed up by saying that the best way to acquire reliable knowledge is the way of evidence obtained by direct experience. Thus, in an empirical science the scientist first gathers data on the basis of experience, then he classifies or if possible, quantifies data, tries to discover relationship in the classified and quantified data, and ultimately by gradual approximation he reaches the truth.

The third assumption underlying the work of the scientist is the principle of parsimony, the basic idea behind which is that phenomena should always be explained in the most economical way possible.

The fourth assumption is that of generality which forms the essential aspect of both the deductive and inductive methods of reasoning. Indeed, historically speaking, it was the problematic relationship between the 'concrete particular' and the 'abstract general' that resulted in two competing theories of knowledge – the rational and the empirical. Beginning with observations of the particular, scientists set out to generalize their findings to the world at large. This is so because they are concerned ultimately with explanation. Of course, the concept of generality presents much less of a problem to natural scientists working chiefly with inanimate matter than to human scientists who, of necessity having to deal with samples of larger human populations, have to exercise great caution when generalizing their findings to the particular parent populations.

Having identified the basic assumptions of science, we come to the core question: What is science? Science may be broadly defined as a way of comprehending the world, as a means of explanation and understanding, of prediction and control. Science is based on certain beliefs and assumptions which are briefly stated as under.

(i) All events in nature are, at least to a degree, lawful and ordered, predictable and regular. This order, predictability and regularity of nature can be discovered through the activities of the scientific method.

(ii) Truths can ultimately be derived only from observation. Science does not depend upon authority as a source of truth but relies upon empirical observation. Thus the phenomena that can actually be observed to exist are within the domain of the scientific method.

(iii) The ultimate goal of science is to integrate and systematize findings into a meaningful pattern or theory which is regarded as tentative and not the ultimate truth. Theory is subject to revision or modification as new evidence is found.

Knowledge Generation Under Positivistic Paradigm

Positivistic paradigm has systematized the knowledge generation process, which proceeds as the development of a science: An area or a set of phenomena is brought under study or close scrutiny. Then the relevant factors and variables are identified. Research or study correlates the variables and parameters which may be found to be related to one another. Information about the phenomena under study is systematically integrated as theories begin to develop. If needed, the researcher may move from correlation to causality through systematic and controlled manipulation of variables (experimentation). This leads to establishment of a body of knowledge (theory) as the outcome of the study. Depending on the nature of the phenomena under scrutiny, laws may be formulated and systematized. Ultimately the established body of knowledge is used, according to necessity, in the resolution of problems or as a source of further enquiry.

3.3.2 Limitations of the Positivistic Paradigm

In spite of the scientific enterprises' proven success, especially in the field of natural sciences, its ontological (theory of being or of existence) and epistemological (theory of knowledge) bases have been the focus of sustained and sometimes vehement criticism. Beginning in the second half of the nineteenth century, the limitations of the positivistic paradigm were pointed out by the best intellectuals in Europe, that is, philosophers, scientists, social critics and creative artists; and even today opponents of positivism are made up of a similar cross-section, including many from within the ranks of the social scientists themselves. Essentially, it has been a reaction against the world picture projected by the positivistic paradigm which, it is contended, devalues life and mind. The fundamental limitation of the positivistic paradigm is that it reflects a mechanistic and reductionist view of nature which, by definition, excludes notions of choice, freedom, individuality, and moral responsibility. To quote a critique:

The positivistic paradigm or for that matter the mechanistic science eliminates the concept of life itself. All they can do is to define life in terms of biochemistry, biophysics, vibrations, wave lengths, and so on; they reduce 'life' to conceivable measurement, but such a conception of life does not embrace the most evident element of all: that life can only be known by a living being, by 'inner' experience. No matter how exact measurement may be, it can never give us an experience of life, for life cannot be weighed and measured on a physical scale.

The Danish philosopher, Soren Kierkegaard, the proponent of existentialism, also pointed out the limitations of the positivistic paradigm. Kierkegaard was concerned with individuals and their need to fulfill themselves to the highest level of development. This realization of a person's potential was for him the meaning of existence. But the

characteristic features of the age, that is, democracy's trust in the crowd mentality, the ascendancy of reason, scientific and technological progress – all militate against the achievement of this end and contribute to the dehumanization of the individual. Kierkegaard was convinced that people suffer from the illusion of objectivity which is one of the main masts of the positivistic paradigm. He wished to free people from this illusion. By 'objectivity' he meant the imposition of rules of behaviour and thought and the making of a person into an observer who is set on discovering general laws governing human behaviour. The capacity for subjectivity, he argued, should be regained. He regarded 'subjectivity' as the ability to consider one's own relationship to whatever constitutes the focus of enquiry.

The justification for any intellectual activity lies in the effect it has on increasing our awareness and degree of consciousness. This increase, some critics claim, has been retarded in our time by the excessive influence the positivistic paradigm has been allowed to exert on areas of our intellectual life. Thus, the positivistic paradigm demands that nothing must be regarded as real which cannot be founded by empirical science and rational methods, by 'objectivity'. Since the whole problem belongs to 'psychic reality', to man's 'inner world', to his moral being, and to the subjective life, there can be no debate unless we are prepared to recognize the serious limitations of positivistic paradigm and the failure of strict adherence to 'objectivity' to give an adequate account of existence.

The theoretical perspective with which the positivistic paradigm has dominated the social science scene, seeks the facts or causes of social phenomena with little regard for the subjective states of individuals. The positivist considers social facts or social phenomena as things that exercise an external and coercive influence on human behaviour. The positivist searches for facts and causes through methods such as survey, questionnaires, inventories and demographic analysis which produce quantitative data, and which allow him to statistically prove relationships between operationally defined variables. The positivist is not interested in the subjective nature of human behaviour and therefore reduces people to statistical aggregates. And these are no less serious limitations.

Many critics of the positivistic paradigm question the perspective adopted by positivist social science because it presents a misleading picture of the human being, this biased and restricted image of humans comes about because the social scientists (wedded to positivism) concentrate on the repetitive, predictable and invariant aspects of the person, on 'visible externalities' to the exclusion of the subjective world. Another limitation of the positivistic paradigm is that it fails to take account of our unique ability, as human beings, to interpret our experiences and represent them to ourselves. We can, and do construct theories about ourselves and our world; moreover we act on these theories. In failing to recognize this, positivitism is said to ignore the world in which the meanings are developed by active subjects through their life experiences.

The findings of positivistic social science are often said to be of little consequence to those for whom they are intended, namely, teachers, social workers, counsellors, personnel managers, and the like. The more effort, it seems, the researchers put in to their scientific experimentation in the laboratory by restricting, simplifying and controlling variables, the more likely they are to end up with a 'pruned, synthetic and constructed version of the whole social reality'.

The limitations mentioned above are quite serious; but what alternatives have been shaped out to cope with these limitations? This is what is going to be outlined next.

3.3.3 Alternative Approaches to Development of Social Science Inquiry

The perspective of the researcher to view 'reality' and visualize appropriate modes of enquiry through which it can be observed, studied and understood, is heavily dependent

on the ideological position one holds about these basic concepts and processes. This fact is at the root of the evolution of different methods of research and methodological emphases. The anti-positivist movement in different disciplines of the social sciences is represented by three schools of thought – phenomenology, ethnomethodology and symbolic interactionism. A common thread running through the three schools is a concern with phenomena, that is, the things we directly apprehend through our senses as we go about our daily lives, together with a consequent emphasis on qualitative as opposed to quantitative methodology.

Phenomenology

In its broadest meaning, phenomenology is a theoretical point of view that advocates the study of direct experience taken at face value. It sees behaviour as determined by the phenomena of experience rather than by external, objective and physically described reality. E. Husserl and A. Schutz are the main proponents of this school of thought. The distinguishing features of this viewpoint are:

- a belief in the importance, and in the primacy of subjective consciousness;
- an understanding of consciousness as active, as meaning bestowing;
- a claim that there are certain essential structures to consciousness of which we gain direct knowledge by a certain kind of reflection. Exactly what these structures are is a point about which phenomenologists differ.

The phenomenologists believe that any phenomenon obtains because it is experienced. The experience provides meaningfulness to the phenomenon. The experience of individuals involved is, thus, an essential and integral part of the phenomenon. It is for this reason that the social phenomena (education included) unlike natural phenomena, have an important coordinate in human experience. The inclusion of this constituent of 'human experience' in the social phenomena makes them very different from natural phenomena. Therefore, the content of educational phenomena have to be viewed with this perspective which has direct implications for deciding the suitability and appropriateness of the mode of inquiry.

The process of experiencing involves the interaction between social environment and the individual. During such interaction another significant process comes into play, namely, 'interpretation', through which meanings to different actions or ideas are attached and the experience constructed. It is this meaningfulness arrived at through defining and interpreting that makes the phenomenon a 'reality'. Getting to know the process of interpretation by individuals requires the researcher to develop empathic understanding. It is through this ability that the researcher can reproduce in his mind feelings, motives and thoughts that are behind the actions of others. This requires a researcher to view the other person's behaviour from the point of view of that person.

To a phenomenologist, the situation under study is essentially unstructured, to which he has to give meanings through symbolic interaction and interpretation. In this process an individual's own consciousness plays an important role in comprehending the situation; relevant information, his perceptions of different elements in the situation, and a synthesized view of the situation, are utilized to arrive at perceiving symbolically meaningful objects which aid the process of understanding the situation. This demands taking into consideration the reaction of the individual, treating him as a person, and also knowing the perspective he holds, to view different elements of the situation for creating symbolically meaningful structures. Processing the situational data thus obtained leads to a gradual comprehension of it in the total context of the experiencer. In fact, this emphasis on experience and thus on experiencer's feelings and motives, makes objectification of data rather difficult and also unnecessary, since some relevant aspects of it are likely to be lost in the attempt of objectifying. It necessitates identifying and discerning the inner world of the individuals for understanding any phenomenon in the social and educational environment.

The essential structure of social phenomenon which involves social organization, social relationships, belief systems, value orientations, the resultant interactional patterns, refers to those elements which make the phenomenon. Individual's experience is an integral part of these elements. Also, the whole phenomenon is temporal and contextual. Any description of a social phenomenon made at a time, and in a given context of the larger social system, cannot be considered valid across varied conditions along the time dimension. Thus, the outcomes of pursuits of research with this perspective cannot be taken for generalizations in the form of context free or universal explanations. Moreover, it necessitates the need of reconstructing continuously what has been already studied, understood and described adequately. This feature of knowledge generation regarding social phenomena may throw light on the nature of knowledge and its structure in social sciences, and makes it distinct from the body of knowledge in natural sciences.

Ethnomethodology

Like phenomenology, it is concerned with the world of everyday life. In the words of its proponent, Harold Garfinkel, it sets out 'to treat practical activities, practical circumstances, and practical sociological reasonings as topics of empirical study and by paying to the most commonplace activities of daily life the attention usually accorded extraordinary events, seeks to learn about them as phenomena in their own right. He maintains that the students of a social world must doubt the reality of that world; and that in failing to view human behaviour more skeptically, social scientists have created an ordered social reality that bears little relationship to the real thing. Ethnomethodology, thus, is concerned with how people make sense of their everyday world. More especially, it is directed at the mechanisms by which participants achieve and sustain interaction in a social encounter – the assumptions they make, the conventions they utilize, and the practices they adopt. Ethnomethodology, then, seeks to understand social accomplishments in their own terms; it is concerned to understand them from within. In identifying the 'taken-for-granted' assumptions characterizing any social situation and the ways in which the people involved make their activities rationally accountable, ethnomethodologists use notions like 'indexicality' and 'reflexivity'; the former refers to the ways in which actions and statements are related to the social contexts producing them, while the latter refers to the way in which all accounts of social settings – descriptions, analyses, criticisms, etc. – and the social settings occasioning them are mutually interdependent.

The notion of symbolic interactionism, essentially derives from the work of G. H. Mead. The noted researchers such as Blumer, Hughes, Becker and Goffman were subsequently associated with this school of thought. It is possible to identify the following three postulates of this viewpoint:

First, human beings act towards things on the basis of the meanings they have for them. Humans inhabit two different worlds: the 'natural' world wherein they are organisms of drives and instincts and where the external world exists independently of them, and the social world where the existence of symbols, like language, enables them to give meaning to objects. This attribution of meanings, this interpreting, is what makes them distinctively human and social. Interactionists therefore focus on the world of subjective meanings and the symbols by which they are produced and represented. This means not making any prior assumptions about what is going on in an institution, and taking seriously, indeed giving priority to, inmates' own accounts. Thus, if pupils appear preoccupied for too much of the time – 'being bored', 'having a laugh', etc. the interactionist is keen to explore the properties and dimensions of these processes.

Second, this attribution of meaning to objects through symbols is a continuous process. Action is not simply a consequence of psychological attributes such as drives, attitudes, or personalities, or determined by external social facts such as social structure or roles, but results from a continuous process of meaning attribution which is always emerging in a state of flux and subject to change. The individual constructs, modifies, pieces together, weighs up the pros and cons and bargains.

Third, this process takes place in a social context, individuals align their actions to those of others. They do this by 'taking the role of the other', by making indications to 'themselves' about 'others' likely responses. They construct how others wish or might act in certain circumstances, and how they themselves might act. They might try to 'manage' the impressions others have of them, put on a 'performance', try to influence others' 'definition of the situation'.

Instead of focusing on the individual, and his or her personality characteristics, or on how the social structure or social situation causes individual behaviour, symbolic interactionists direct their attention at the nature of interaction, the dynamic activities taking place between people. In focusing on the interaction itself as a unit of study, the symbolic interactionist creates a more active image of the human being and rejects the image of the passive, determined organism. Individuals interact; societies are made up of interacting individuals. People are constantly undergoing change in interaction and society is changing through interaction. Interaction implies human beings acting in relation to each other, taking each other into account, acting, perceiving, interpreting, acting in relation to each other, acting again. Hence, a more dynamic and active human being emerges rather than an actor merely responding to others.

A Critical Overview of the Approaches

For the purpose of this overview, we term the phenomenological, ethno methodological and symbolic interactionist perspectives commonly, as the 'phenomenological perspective or approach and make the following observations.

1. The way in which 'reality' is perceived in social situations (education included) with the phenomenological perspective is an artifact, a construction of all the participants of a social situation which, however permanent it may appear to be, may be redefined and, therefore, changed. It is assumed that the human mind has an inherent capacity to define reality and interpret it and therefore, understand and describe it with related referents and contexts in which it operates. If it is further assumed, which many researchers do, that the whole process of defining 'reality' in its due context can be examined by another technical and willing person, and assuming still further that the two could have identical or similar orientations in perceiving reality, they are likely to arrive at similar conclusions. The strength of the argument lies in that even if they do not arrive at similar conclusions, this suggests some way to judge the validity of the approach.

2. If the position of the phenomenological perspective and the contribution of this approach to the process of knowledge generation are examined, one notices some ambiguity as an alternative approach to what positivists have suggested. The emphasis on the involvement of the observer and his perceptions leaves the whole process of research and its outcomes transitory.

3. The process through which the individual observer may form his perceptions, and even define the reality and understand it, leaves scope for giving emphasis upto some degree, to certain views or feelings and ideas that may be dear to him. In fact, this is an essential feature of the phenomenological approaches. This may allow not only the scope for utilization of ideas and concepts in defining and understanding in a detached manner but may also get reflected in the very understanding and description of the reality. This can easily happen when it comes to educational research which has implications for decision-making in various ways and social action. For instance, how equality of opportunity is defined and described in a social context cannot be free from one's views about certain matters which are of paramount importance socially and can lead to very varied conclusions depending upon how he utilizes his views for fixing the social parameters and develops the logical process to define it. At times, it may even run the risk of giving ventilation to the researcher's slanted views even if he is a

man of integrity because the cognitive process in him is not free from what he holds about a social situation and how he thinks others do about the same situation.

4. The foregoing observations about phenomenological approaches in general highlight mainly two points. One, these approaches emerged mainly as a strong reaction to the positivist approach of using the paradigm of natural sciences in social sciences. There is a powerful appeal in their argumentation in discarding the positivists' scientific method as inadequate and inappropriate to understand social phenomenon. While phenomenologists can be legitimately credited with highlighting some very essential aspects regarding reality and the process of describing it, a very perceptive mind in a researcher may easily find the points at which they are ambiguous, vague and less convincing as far as the adequacy of the approach to contribute to the process of knowledge generation is concerned. Two, the approaches advocated by the positivists and phenomenologists are based on very conflicting premises, and no doubt, each one holds some promise in the pursuit of knowledge generation. However, their inadequacies should suggest the scope for further thinking and continued search for new paradigms or modified ones to serve as more adequate tools of research.

Check Your Progress

Notes: a) Space is given below for writing your answers.

b) Compare your answers with those given at the end of the unit..

1. What is Positivistic Paradigm?

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2. List the limitations of the Positivistic Paradigm.

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3.4 EMERGENCE OF FIELD METHODS

To look into the emergence of field methods we first start with a question. How can knowledge of the ways in which children learn and the means by which schools achieve their goals be verified, built upon and extended? This is a central question for educational research. The problem of verification and cumulation of educational knowledge has been implicit in our discussion of the nature of educational inquiry in the foregoing sections. There, we have outlined two broad approaches to educational research. The first, based on the scientific (positivistic) paradigm, rests on the creation of theoretical frameworks that can be tested by experimentation, replication and refinement. Against this scientific, experimental approach, we have outlined an alternative perspective which has been described as interpretive and subjective, a focus we hasten to add that should be seen as complementing rather than competing with the experimental stance. In this section our presentation emphasizes the interpretive, subjective dimensions of educational phenomena that are best explored by case study method, projective technique and anecdotal records method.

Emergence of these methods which may be considered as 'field methods' is, thus, a fall-out of the acceptance of interpretive approaches in social science research. Since the scope of controlled experiment is very limited in social sciences, the use of "natural experimentation" or "field methods" is the most reasonable way-out. Under these methods, the researcher has to make a field study or survey in order to collect research materials or data. The phenomenon is empirically studied and examined, and a conclusion is finally arrived at regarding the cause and effect of the phenomenon. Obviously all these methods are based on observation. Consequently 'field method' is a some what open-ended term that concerns not only techniques but also methodology and research procedure. The various elements involved might be defined as follows: 'general methodology' concerns the systematic and logical study of the general principles guiding an investigation. 'Research strategy or research procedure' refers to the way a particular investigation is designed and carried out. 'Research technique' is a particular fact-finding manipulative operation that is used to yield social data. In these three distinct aspects of 'field method' are brought together in the research process as they are intertwined with each other in the course of any social investigation. 'Field method' is not an exclusive method in the same sense, as say, experimentation is. Field methods are more like an umbrella of activities beneath which any technique of research may be used for gaining the desired information regarding the investigation.

3.4.1 Case Study Method

Case study can be defined as an indepth study which is concerned with pertinent aspects of a particular unit or situation. The unit under study may be an individual, a social institution or an agency such as a family, a library, a school, a college, or a rural village, etc. The case to be studied may be some phase of the life history of the unit of attention, or it may represent the entire life history or total functioning of the individual unit. Thus, the case study method involves the collection and recording of data about a case. The collection of data on site is termed as 'field-work', and it involves:

(a) generally, participant or non-participant observation and interviewing;

(b) probably, the collection of documentary evidence and descriptive data, and even the administration of tests or questionnaires; and

(c) possibly, the use of photography, motion pictures or videotape recording.

Thus, whatever the problem or the approach, at the heart of every case study lies a method of observation-participant or non-participant. In participant observation, observers engage in the very activities they set out to observe. Often their 'cover' is so complete that as far as the other participants are concerned, they are simply one of the group. To have better insight into the life of a gang of juvenile delinquents, going to live with them for an extended period of time, is a good example of participant observation. Non-participant observers, on the other hand, stand aloof from the group activities they are investigating. The best illustration of the non-participant observer role is perhaps the case of the researcher sitting at the back of a classroom coding up every three seconds the verbal exchanges between the teacher and the pupils by means of a structured set of observational categories.

The critics of participant observation as applied to case study or any other field method point out that observers may lose their perspective and become blind to the peculiarities that they are engaged to be investigating. These criticisms raise questions about two types of validity in observation-based research. In effect, comments about the subjective and idiosyncratic nature of the participant observation study are to do with its external validity. How do we know that the results of this one piece of research are applicable to other situations? Fears that observers' judgment will be affected by their close involvement in the group relate to the internal validity of the method. How do we know the results of this one piece of research represent the real thing, the genuine product?

Many educational problems involve such a complex interaction of variables that there seems to be an urgent need for analyses based on close observation. Case study method may be seen as a response to this need for a return to close natural observation, or as a reaction against the positivist epistemology implied in the psychostatistical paradigm. Case study methods are often described as naturalistic, qualitative, descriptive, responsive, interpretative or idiographic by way of contrast to the abstracted, quantitative nomothetic approach of psychostatistical methods that strip observation to indices.

3.4.2 Projective Techniques

Projective techniques are used to probe areas that cannot be reached easily by other means or areas in which direct questions are apt to elicit distorted data. Instead of asking a subject for specific information, an investigator has to interpret or respond freely to ambiguous stimuli, such as ink-blots, pictures, unfinished sentences, work associations or life like dramatic roles. Each of the above mentioned types of stimuli has given rise to a particular type of projective test or technique, such as Thematic Apperception Test, Rorschach Test, Ink-blot Test, Word Association Test, etc. Through self-structured, spontaneous responses, the subject unconsciously reveals manifestations of his personality characteristics and organization. Only highly trained workers can interpret the implications of these responses, and scoring them is laborious. Projective tests are difficult to validate, and many of the tools have not been standardized. Some weaknesses in them are being overcome, but much work remains to be done.

3.4.3 Anecdotal Records

In order to have better insight into certain unusual aspects of emotional and social behaviour of pupils the teachers and the counsellors keep anecdotal records in schools in a cumulative way. Thus, anecdotal materials have come to be a significant part of evaluating and counseling activities in schools. A type of cumulative individual record which emphasizes episodes of behaviour important in the development of character or personality is known as anecdotal-behaviour journal. These anecdotes include not only maladjustment, but also positive and constructive episodes, the admirable behaviour of well-adjusted pupils, and the outstanding accomplishments of the superior or talented. The anecdote as a revealing episode of conduct is in the form of a work picture or verbal snap-shots. To be most helpful, anecdotes should possess the characteristics of objectivity, factual emphasis, clarity and subjectivity (in the sense that an artistically composed photograph is subjective, with a centre of attention and with subordination of inconsequential details). Anecdotal records serve useful purposes by way of mutual understanding between teachers and pupils, counselling relationships, curriculum development, appraisal of learning outcomes and case instructions in professional programmes for preparing teachers and others.

Check Your Progress

Notes: a) Space is given below for writing your answer.
b) Compare your answer with that given at the end of the unit..

3. Name at least three field methods.

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3.5 REVIEW (RETHINKING) OF CONCEPTS AND CONSTRUCTS

Before reviewing or rethinking of the significant concepts and constructs involved in the process of educational research we would, first, like to clarify our ideas about these terms (concept and construct).

Concept

Language consists of words and sentences.

To the words of ordinary speech correspond the concepts. Words of language refer to characters or attributes of individual things or to relations among them. All such words are called 'descriptive' terms. Those with name, not individual things, but their characters and relations, are concepts of science. Conceptualization or the process of concept formation is essential to the processes of thinking and scientific technique, since it renders precise meaning for communication and brings about economy in the use of language. Concepts are not only basic to scientific method, but they are the foundation of all human communication and thought. In a science, as in educational research, concepts must be communicable in a special sense. They must be formed in such a way that their components are known. Clarification of the elements of such concept-formation is the main function of definition, which is considered basic to the general problem of conceptualization. The process of communication becomes difficult between individuals who do not share the conceptual system. Concepts, it seems to be clear now, develop from a shared experience. The development of a conceptual system is very much like the development of a new language, and this goes hand in hand with any research process.

Construct

We frequently make inferences from observations to something not observed. In order to explain certain manifest behaviour, the scientist formulates concepts that name unobserved states of the organism or object exhibiting the observed behaviour. He postulates certain lawful connections between these 'underlying states' and the observed behaviour. These 'inferred' characters are called **constructs**. Sometimes they are referred to as hypothetical constructs, to indicate that they are not considered real objects or events. Most theories of behaviour involve constructs. Terms such as intelligence, motivation, inhibition, mediation, etc. refer to constructs, which are the abstract elements of a theory.

One important consideration in systematizing the research process is to look into the nature of constructs regarding educational phenomena and their operationalisation. When constructs are operationalised, precision and accuracy in their measurement are attained. This also helps in formulating hypotheses in testable forms. But one should remember, operationalisation can be attempted if the constructs under study are of such a nature that they can be observed to operate with respect to certain concrete referents under specified conditions. This demands a fair amount of stability in these referents and their functioning under specified conditions. But, in educational research certain constructs are of such a nature that they do not come under conceptualization from situation to situation with the same structure and form, and to that extent, are not amenable to concretization through research in the same way as it could be done in certain other fields of inquiry viz. physical sciences. As an illustration, teaching effectiveness is one such construct. In a study on teaching effectiveness, it can be seen that operationalising this construct to be applicable to all possible teaching-learning situations will be almost impossible, because teaching effectiveness is determined by a large number of criteria pertaining to the teacher, learners as well as the teaching-learning context. Moreover, there will be several alternative ways of organizing the

teaching-learning process in a given situation, may be quite effective ones which could lead to the attainment of criteria fixed for effectiveness. This happens mainly because of human interaction involved in the situation, and many other related variables coming into play. Thus, to come out with a stable concept of teaching effectiveness valid for all situations can hardly be attempted. This puts a serious constraint on theorization about teaching effectiveness. This illustration makes it clear that constructs in education may be found, but these cannot be operationalised to an adequate degree of specificity and concreteness. Recognition of this peculiar nature of some of the constructs in educational research will have important implications for different aspects of research methodology.

Rethinking of concepts and constructs is necessary in the research process of any discipline as a continuing knowledge generation process. So is the case in educational research. A continuous process of research will throw new insights into the basic processes and relationships involved in inquiry in the emerging context which have to be fed into the process of evolving newer concepts, structures and models in order to respond to the new demands put on the education system by the evolving society.

We know in research dependable evidences need to be collected through the a scientific process. And, this scientific process of collecting evidence in order to back up decisions regarding various educational practices constitutes what is known as the methodology of educational research. Research methodology in education is a complex process, mainly because the solution to educational problems involves a variety of factors related to many other fields affected by change and development in the life of the individual and the society. In fact, the researcher in education has to face many questions, problems or issues in dealing successfully with the research task. There are theoretical-conceptual issues and problems of methodology that he has to keep clearly in view to respond adequately and logically to the requirements of research tasks. Very often it is seen that lack of proper understanding of such concepts and issues makes even a well-defined research study indefensible at the completion of enquiry. The purpose of the present section is to highlight a few of such methodological concepts and issues in educational research.

3.5.1 Objectivity

Objectivity is a very important concept in educational research. Doubt is raised about the objectivity of observations made or evidence collected. In one way, objectivity is defined as agreement among expert judges on what is observed. The Positivistic view holds that scientific procedures of educational research should not be vitiated by human concerns, because all forms of knowing (such as observation) are biased by values, attitudes, etc. of the human observer. It seems, therefore, that it is not possible ever to be completely objective. In other words, objectivity is a matter of degree. But, if evidence is to be dependable, a criterion of objectivity is indispensable. The educational researcher can use one test of objectivity, i.e. replicability. This means that from the description of a research study, another competent investigator can replicate it. Methodologically, this gives a rule: All procedures of research must be replicable as well as possible to be carried out apart from the investigator. The educational researcher has to ultimately accept it that there are no absolute truths. We cannot know anything absolutely. We have to admit this limitation of research technique, such as observation also. There are only relative degrees of reliable and valid knowledge about the procedures and techniques in educational research. For the educational researcher the promising aspect is that objective procedures increase the probability of obtaining more reliable and valid knowledge from research.

3.5.2 Generalization

No researcher is interested solely in the collection of data, for he will want to derive statements that are true for situations other than those in which the data were collected.

For instance, if a teacher of educable mentally challenged children were to develop a remedial instruction programme for reading and aimed to demonstrate that a group of such children learned to read substantially and significantly more rapidly than a group of similar children exposed to mere typical reading instruction, the teacher would then be concerned with asking whether similar results would be found if the remedial programme is used with other groups. The teacher wants to make general statements from the data of other sample groups, because his study would be of little importance if the method is effective only with the group studied and not with other groups. We are assuming here that the teacher is objectively reporting the result (as is expected of every researcher), for, if he were not, he might be content with having discovered the fact that the remedial programme was an effective one for his particular class and leave the matter at that. The researcher never stops with data, he is always concerned with deriving general statements that can be applied to other situations. Thus, conclusions of an inquiry, if they are to be applicable to more than the particular context of the inquiry, are stated as generalizations. The content of the generalization can be specified only in terms of its place in a more comprehensive system of propositions. A simple generalization moves from a set of propositions about a number of individual cases to all cases of that class. An extensional generalization moves from a narrower class to a broader one. Both these types are likely to be only descriptive. A theoretical generalization is fully explanatory. A valid generalization derived from data is sometimes referred to as a law, although the term 'law' is more commonly used in the physical sciences than in the behavioural sciences, perhaps because the behavioural scientists have difficulty in determining what is and what is not a valid generalization. Generalizations or laws must be such that they can be used to predict events. Generalizations that can be used only for accounting for past events provide what are called postdictive systems; the generalizations developed by the scientists must be predictive. A theory consists of a group of generalizations that together account for particular classes of phenomena. The theory is stated in simple and precise terms. It must be in conformity both with the observed and with the previously established body of knowledge or valididated theories. A theory provides means for its own interpretation and verification. The statements or generalizations that form the body of a theory are sometimes referred to as the postulates of that theory. It sets out constructs, definitions or propositions in order to present a systematic view of the phenomena.

The possibility of valid generalization is a nagging question in educational research. In educational research, as in any other field, there have been attempts to arrive at generalization regarding certain relationships. To arrive at such generalizations the usual methodology is to go for large samples including a variety of situations in educational settings. The essential feature of this approach is to make controlled observations, as it is done in laboratory type experimentations, aiming at discerning the effects of certain selected variables on certain others under specified conditions, keeping all other factors non-operative or neutralizing their effects. In case of teaching-learning situations, for example, studies of this sort are quite significant as they increase the understanding of certain basic relationships in the teaching-learning process. These relationships would form the basis of selecting suitable inputs and processes to be incorporated into the instruction for various levels. However, the application of these selected inputs and processes to actual teaching-learning situations, may make their operations substantially different as the situations would become complex due to the inter-play of innumerable variables. This complexity of situation is due to the fact that certain controls which were exercised under the laboratory type experimentation are no longer operative in actual teaching-learning situations. The interplay among numerous organismic and environmental variables would make each teaching-learning situation acquire a great deal of uniqueness. Proper understanding of these situations would demand employing a methodology to treat each unique teaching-learning situation, or a few very similar ones, separately, and bring them under investigation in an intensive

manner, for studying the complex dynamics presented by a variety of variables. Such studies would warrant limited generalizations to the situations that may be considered very close to these studies. This is particularly significant in the light of the methodological consideration that if attempt is made for wider generalizations across the situations, it would be only on the basis of elements common to the interplay in different situations. Since these interplays among variables are unique in many ways, such commonalities may be very meager and would, thus, prevent meaningful generalizations. But, these limited generalizations would be of substantial assistance in concretizing the different educational sub-systems suited to each of these situations. Further, in the long range, when a number of situations representing different sets of conditions are intensively studied, perhaps, a better scope would be provided by the outcomes of these studies for attempting wider generalizations; this would have to be done through a very analytical study of the processes that have been brought out as being operative in individual studies. Such an approach where the complex interplays as obtained in individual situations are studied in an intensive manner would require that the studies be designed in such a way that a variety of variables and their interplay can be subjected to systematic observations and their effects can be discerned.

3.5.3 Nature of Reality

Ever since the methods of social sciences have been applied to the study of education and its problems, a controversy and debate has resulted. Educational research has at the same time absorbed two competing views of social sciences – the established, traditional view and a more recently emerging radical view. The former holds that the social sciences are essentially the same as the natural sciences and are therefore concerned with discovering natural and universal laws regulating and determining individual and social behaviour; the latter view, however, while sharing the rigour of the natural sciences and the same concern of traditional social science to describe and explain human behaviour, emphasizes how people differ from inanimate natural phenomena and, indeed, from each other. These contending views – and also their corresponding reflections in educational research – stem in the first instance from different conceptions of social reality and of individual and social behaviour.

The two views of social science as outlined above, represent strikingly different ways of looking at social reality and are constructed on correspondingly different ways of interpreting it. We can perhaps most profitably approach these two conceptions of the social world by examining the explicit and implicit assumptions underpinning them. First, the ontological assumptions which concern the very nature or essence of the social phenomena being investigated get expressed through a few questions. Is social reality external to individuals – imposing itself on their consciousness from without – or is it the product of individual consciousness? Is reality of an objective nature, or the result of individual cognition? Is it a given 'out there' in the world, or is it created by one's own mind? These questions spring directly from what is known in philosophy as the nominalist – realist debate. The former view holds that objects of thought are merely words and that there is no independently accessible thing constituting the meaning of a word. The realist position, however, contends that objects have an independent existence and are not dependent for it on the knower.

The second set of assumptions is of an epistemological kind. These concern the very bases of knowledge – its nature and forms, how it can be acquired, and how communicated to other human beings. The question is: whether it is possible to identify and communicate the nature of knowledge as being hard, real and capable of being transmitted in tangible form, or whether knowledge is of a softer, more subjective, spiritual or even transcendental kind, based on experience and insight of a unique and essentially personal nature. The epistemological assumptions in these instances determine extreme positions on the issues of whether knowledge is something which can be acquired on the one hand, or is something which has to be personally experienced on

the other. How one aligns oneself in this particular debate profoundly affects how one will go about uncovering knowledge of social behaviour. The view that knowledge is hard, objective and tangible will demand of the researcher an observer role, together with an allegiance to the methods of natural science; to see knowledge as personal, subjective and unique, however, imposes on researchers an involvement with their subjects and a rejection of the ways of the natural scientist. To subscribe to the former is to be positivist; to the latter, anti-positivist.

The third set of assumptions concern human nature and, in particular, the relationship between human beings and their environment. Since the human being is both its subject and object of study, the consequences for social science of assumptions of this kind are indeed far–reaching. Two images of human beings emerge from such assumptions – the one portrays them as responding mechanically to their environment; the other, as initiators of their own actions.

It would follow from what has been said so far that the three sets of assumptions identified above, have direct implications for the methodological concerns of researchers, since the methodological concerns of researchers, since the contrasting ontologies, epistemologies and models of human beings will in turn demand different research methods. Investigators adopting a positivist approach to the social world and who treat it like the world of natural phenomena as being hard, real and external to the individual will choose from a range of traditional options – surveys, experiments, and the like. Others favouring the more subjectivist (or anti-positivist) approach and who view the social world as being of a much softer, personal and humanly–created kind will select from a comparable range of recent and emerging techniques – accounts, participant observation, unstructured interview, etc. The former approach to research is more quantitative and nomothetic, while the latter is more qualitative and idiographic.

Thus, each of the two perspectives on the study of human behaviour and the nature of reality has profound implications for research in social and behavioural sciences. The choice of problem, the formulation of questions to be answered, the characterization of the respondents, the kinds of data sought and their mode of treatment – all will be influenced and determined by the viewpoint held.

3.6 VARIED STUDIES IN EDUCATION

Varied studies are possible in education. The type of a study will depend upon the purpose the educational researcher has set for himself to attain. His problem may be to know the status of some aspect of education for which he would launch a 'survey study'. He may like to know how certain aspects of education are related with certain other aspects, and he may undertake a 'correlational study'. Or, he may aim at understanding the inner dynamics of an educational phenomenon for which he needs to take up an 'experimental study' of the variables of the phenomenon to know how, which way or why they function under the situation for study. The methodology of the type of studies will obviously differ accordingly. We present here a brief outline of three major types of educational studies.

3.6.1 Relationship Studies

Human behaviour at both the individual and social level is characterized by great complexity. Given the present state of educational research, we understand comparatively little about this complexity. One approach to a fuller understanding of human behaviour is to begin by testing out simple relationships between those factors and elements deemed to have some bearing on the phenomena in question. The value of relationship studies is that these are able to achieve this end.

One of the primary purposes of science as it is traditionally conceived is to discover relationships among phenomena with a view ultimately to predicting and , in some

situations, controlling their occurrence. Much of educational research is concerned primarily with establishing interrelationships among variables. For instance, we may want to know how delinquency is related to social class background; or whether an association exists between the number of years spent in fulltime education and subsequent annual income; or whether an association exists between achievement and learner's parental background. Numerous techniques have been devised to provide us with numerical representations of such relationships which are known as 'measures of association or correlation'. Some of such measures of association are given by product-moment correlation, rank-order correlation, phi coefficient, etc. Correlational techniques are generally intended to answer three questions about two variables or two sets of data. First, 'Is there a relationship between the two variables (or sets of data)?' If the answer to this question is 'yes', then two other questions follow: 'What is the direction of the relationship?' and 'What is the magnitude of association?' Relationship in this context refers to any tendency for the two variables (or sets of data) to vary consistently. Pearson's product-moment coefficient of correlation, one of the best known measures of association, is a statistical value ranging from -1.0 to +1.0 and expresses this relationship in quantitative form. Where the two variables (or sets of data) fluctuate in the same direction, i.e., as one increases so does the other, or as one decreases so does the other, a positive relationship is said to exist. A negative correlation or relationship, on the other hand, is said to exist when an increase is one variable is accompanied by a decrease in the other variable. Zero correlation means that a person's performance on one variable is totally unrelated to his performance on a second variable. Other measures exist, however, which allow us to specify relationships when more than two variables are involved. These are measures of 'multiple correlation' and 'partial correlation'. Multiple correlation, or 'regression' as it is sometimes called, indicates the degree of association between variables. Partial correlation aims at establishing the degree of association between two variables after the influence of a third variable has been controlled or 'partialled out'.

It is clear now that relationship studies comprise those studies in which attempts are made to discover or clarify relationships through the use of correlation coefficients. Relationships thus disclosed may simply indicate what goes with what in a given context, or else they may provide a basis on which to make predictions about the variables being studied. The basic design of relationship studies is simple and involves collecting two or more sets of scores on the same group of subjects and computing correlation coefficients. Many useful studies in education have been based on this simple design. Those involving more complex relationships, however utilize multiple and partial correlations in order to provide a clearer picture of the relationships being investigated. One should remember that the quality of relationship studies is determined not by the complexity of the design or sophistication of the correlational techniques used but by the level of planning and the depth of the theoretical constructs going into the development of the hypotheses. It also should be borne in mind that correlation refers to measures of association and does not necessarily indicate causal relationships between variables.

Relationship studies may be either exploratory or predictive. Exploratory relationship study may be particularly useful in the fields where little or no previous research has been undertaken. Frankly speaking, it is often a shot in the dark aimed at verifying hunches a researcher has about a presumed relationship between characteristics or variables in the educational situation. For example, let us take a complex notion like 'teacher effectiveness'. This is dependent upon a number of less complex factors operating singly or in combination. Factors such as intelligence, motivation, perception of the teacher, verbal skills and empathy come to mind as possibly having an effect on teaching outcomes. A review of research literature will confirm or reject these possibilities. Once an appropriate number of factors have been identified in this way, suitable measures may then be chosen or developed to assess them. They are then given to a representative sample and the scores obtained are correlated with a measure

of the complex factor being investigated namely, teacher effectiveness. As it is an exploratory undertaking, the analysis will consist of correlation coefficient, only, though if it is designed carefully, we will begin to achieve some understanding of the particular behaviour being studied. The investigation and its outcomes may then be used as a basis for further research or as a source of additional hypotheses.

Exploratory relationship studies may also employ partial correlational techniques. Partial correlation is a particularly suitable technique when a researcher wishes to nullify the influence of one or more important factor upon behaviour in order to bring the effect of less important factors into greater prominence. If, for example, we wanted to know more fully the determinants of 'academic achievement' in schools, we might begin by acknowledging the importance of the factor of intelligence and establishing a relationship between intelligence and academic achievement. The intelligence factor could then be held constant by partial correlation, thus enabling the investigator to clarify other, lesser factors such as motivation, parental encouragement or vocational aspiration. Clearly, motivation is related to academic achievement but if a pupil's motivation score is correlated with academic achievement without controlling the intelligence factor, it will be difficult to assess the true effect of motivation on achievement because the pupil with high intelligence but low motivation may possibly achieve more than pupils with lower intelligence but higher motivation. Once intelligence has been 'partialled out', it is possible to see more clearly the relationship between motivation and achievement. It is worth mentioning that exploratory relationship studies may employ sophisticated multivariate techniques in delving out associations between dependent and independent variables.

In contrast to exploratory relationship studies, prediction studies are usually undertaken in areas having a firmer and more secure knowledge base. Prediction through the use of correlational techniques is based on the assumption that at least some of the factors that will lead to the behaviour to be predicted are present and measurable at the time the prediction is made. In order to be valuable in prediction, the magnitude of association between two variables must be substantial, and the greater the association, the more accurate the prediction it permits. Most efforts to predict future behaviours, however, are based upon a number of predictor variables, each of which is useful in predicting a specific aspect of future behaviour. In the prediction of college success, for instance, a single variable such as academic achievement is less effective as a predictor than a combination of variables such as academic achievement together with, say, motivation, intelligence, study habits, etc. More complex studies of this kind, therefore, generally make use of multiple correlation and multiple regression equations. One final point: correlation is a group concept, a generalized measure that is useful basically in predicting group performance. For instance, it can be predicted that gifted children as a group will succeed at school, but it cannot be predicted with certainty that one particular gifted child will excel.

3.6.2 Developmental Studies

Developmental studies have a two-fold meaning in the context of educational research.

Meaning – One

The term 'developmental' is primarily biological, having to do with the organization and the life process of living things. The concept has been appropriated and applied to diverse social science phenomena. In education, developmental studies retain the original biological orientation of the term, having to do with the acquisition of motor and perceptual skills in young children. However, the designation 'developmental' has wider application in education, for example, in connection with Piagets' studies of qualitative changes occurring in children's thinking, and Kohlberg's work on moral development.

Developmental studies are primarily concerned with time trends; that is to say, with changes that occur as a function of time. Developmental studies are of such far-reaching consequence for education that research of this type must assume a place of great importance. We must not forget that the central task of education is that of producing development. Some of the most important problems of education involve time trends, for education itself is concerned with personal change and with the control of learning as it occurs in pupils. Even though the classroom teacher is mainly concerned with change over a relatively short period of time, such as a decade or a life time. Classroom examinations given at the end of a semester are limited studies of development in which increments in an area of intellectual skill are studied over a short period of time, perhaps without recognizing that change may not be permanent but will undergo a period of waning and waxing as time goes by. The latter type of problem has come to be of increasing importance as educators have extended their interest in educational problems from the childhood years to the entire life span.

The term 'longitudinal' is used to describe a variety of developmental studies that are conducted over a period of time. Often, as we have seen, the word 'developmental' is employed in connection with longitudinal studies that deal specifically with aspects of human growth. A clear distinction is drawn between longitudinal and cross-sectional studies. The longitudinal study gathers data over an extended period of time; a short-term investigation may take several weeks or months, a long-term study can extend over many years. Where successive measures are taken at different points in time from the same respondents, the term 'follow-up study' or 'cohort study' is used.

Where different respondents are studied at different points in time, the study is called cross-sectional. A cross-sectional study is one that produces a 'snapshot' of a population at a particular point of time. The epitome of the cross-sectional study is a national census in which a representative sample of the population consisting of individuals of different ages, different occupations, different educational and income levels, and residing in different parts of the country, is interviewed. More typically in education, cross-sectional studies involve indirect measures of the nature and rate of changes in the physical and intellectual development of samples of children drawn from representative age levels. The single 'snapshot' of the cross-sectional study provides researchers with data for either a retrospective or a prospective enquiry.

Trend studies (as developmental studies) have an obvious importance to educational administrators or planners. Like cohort studies, they may be of relatively short or long duration. Essentially, the trend study examines recorded data to establish patterns of change that have already occurred in order to predict what will be likely to occur in the future. A major difficulty the researchers face in conducting trend analysis is the intrusion of unpredictable factors that invalidate forecasts formulated on past data. For this reason, short-term trend studies tend to be more accurate than long-term analysis.

Longitudinal developmental studies of the cohort analysis type have an important place in the research armory of educational investigators. Cohort studies of human growth and development conducted on representative samples of populations are uniquely able to identify typical patterns of development and to reveal factors operating on those samples which include other research designs. The strength of cohort studies in schools is that they provide longitudinal records whose value derives in from the known fallibility of any single test or assessment. Time is generally more readily available in cohort studies, allowing the researcher greater opportunity to observe trends to distinguish 'real' changes from chance occurrences.

Though longitudinal studies are useful in accumulating data for the same subject or subjects at various levels and help in intensive studies of individual or individuals, they have sampling weaknesses. The data in these studies are obtained from a single individual or a limited number of individuals. If the sample selected proves to be a poor

one, there is nothing that can be done to it, nor can new longitudinal variables for investigation be introduced after the completion of the study. Longitudinal studies may give accurate descriptions of the growth of the individuals studied, but these data are not necessarily representative of the total population from which the individuals are selected. It also becomes extremely difficult to get the data in continuity from the individuals who are selected from a mobile community. Sometimes longitudinal studies become unwieldy and unmanageable because of the wide range of behaviour to be observed, large number of the subjects in the sample, or less duration of the time period in which the study has to be completed. To overcome this difficulty, the study should not be conducted by one individual but a group of researchers.

Meaning – Two

In education laboratory type controlled studies alone cannot provide the full picture of the operation of innumerable variables in an educational situation which essentially goes on in a social context. This leads to a position that studies may have to be conducted in real educational setting without going for any control which may render the situation artificial and its understanding less meaningful. However, at the same time these studies may have to be so conducted that systematization and objectivity of approach will not be in any way jeopardized. Such studies are referred to as 'developmental' studies. Findings generated from other types of studies are further investigated into in real educational situations which form the content of developmental studies. The relevance and placement of developmental studies are better understood if one looks into the 'research and development' ('R and D') efforts made in various industries. The major purpose of 'R and D' is to generate new practices in laboratory conditions and through concerted efforts gradually introduce them to the field. In instruction, development studies are concerned with development of instructional materials, working out applications, evolving models, etc., and also studying relevant relationships among various organismic and environmental variables operating in real educational situations. The significance of developmental studies in instruction is two-fold. It not only increases the applicability of educational practices in specific situations, but also helps in generating fuller insight into the instructional process. Nomenclatures like 'field studies', 'a-experimentation', etc., have been used to specify the developmental studies. However, in all such cases these efforts are described as investigators either to study the functioning of models, inputs, devices, etc., in the natural setting or to examine the interrelationships existing among a wide range of variables in real instructional situations or both.

The developmental studies aim at evolving models, inputs, materials in instruction with increased applicability in real situations, as well as generating a fuller understanding regarding the instructional process. Designing such studies must see that scientificity may not be sacrificed. Rather, the efforts should be to identify and develop designs suitable for the nature and purpose of developmental studies. This would involve development of hypothetical systems and subjecting them to continuous tryout in specific settings, collecting evidences from varied sources regarding their effectiveness and feasibility, and bringing about modifications in various aspects of the system. Such a design of evolving an instructional system suitable to specific social contexts is originated from the concept of systems approach and systems analysis. Basically, systems analysis involves the various steps of the scientific method such as generating hypothetical plans of action which are subjected to testing and modification. A major problem that a researcher while evolving instructional systems would face is the ways and means by which he can collect evidences, in a comprehensive and holistic manner, from various personnel and situations related to the system. Techniques of 'retrospective interviewing' might be used to trace the origins of observed phenomena. There is no opportunity in such methods to control variables or to restrict the number of cases to be examined. Yet its value can be seen in that it allows a thorough examination which would help in discovering profitable steps to explain an observed phenomenon. Much of the data would be based on the testimony of a variety of persons directly or indirectly

connected with instruction like teachers, students, parents, administrators, planners, etc. Criteria like expected learning outcomes, political ideology of the broader social system, feasibility aspects like time and cost, etc., should be kept in focus, while dealing with these evidences. Replication of models or strategies with similar purpose in varying instructional situations would help in identifying probable modifications to be carried out in them according to the variation of contexts.

The significance of developmental studies in contributing towards knowledge generation may have to be seen in two ways. First, an investigation into the functioning of an educational intervention in a specific situation helps in generating better understanding regarding the intervention in the context of the organismic as well as environmental variables existing in the situation. Such an understanding leads to generalization about the educational process within the situation under study. Evidently this would require a comprehensive study of all the variables in their natural operation within the given situation. Secondly, apart from generating intra-situational generalization, developmental studies when conducted in educational situations of similar and different nature for comparable objectives provide certain broad generalizations related to the workability of the intervention under study in these situations. Although findings of such studies are not expected to be generalized to a population of situations, an investigator may be in a position to formulate certain broad statements regarding the functioning of an educational intervention under study after it is tried out in various situations of similar and dissimilar nature. And, these statements might help in seeing relationships among innumerable variables that operate in the instructional process. This process will lead to seeing conditions of learning, structuring information and devising effective sequence for presenting this information in an interconnected manner which may finally lead to theorization on instruction.

3.6.3 Understanding Studies

'Understanding studies' come under qualitative research. Here 'understanding' (or verstehen) is accepted as an epistemological principle. Such studies aim at understanding the phenomenon or event under study from the interior. It is the view of one subject or of different subjects, regarding the course of social situations (education included) i.e. conversations, discourse, processes of work, etc., or the cultural or social rules, relevant for a situation, are to be understood. How this understanding is put into methodological terms depends on the theoretical position underpinning the research. In this respect there are three basic positions:

(i) the tradition of symbolic interactionism, concerned with studying subjective meanings and individual ascriptions of sense;

(ii) two, ethnomethodology, interested in routines of everyday life and their production;

(iii) structuralist position, starting from processes of psychological or social unconsciousness. It is possible to differentiate those approaches of understanding studies foregrounding the 'subjects' viewpoint' from those seeking descriptions of given (everyday, institutional, or more generally social) milieus. Understanding studies such as ethnomethodological analyses of language stress strategies interested in how social order is produced, or there may be strategies oriented towards reconstructing 'deep structures that generate action and meaning' in a situation. Each of these three positions conceptualizes how the subjects under study – their experiences, actions, and interactions – relate to the context in which they are studied in different ways.

The common features of qualitative research involved in understanding studies across different theoretical positions as noted earlier include 'verstehen' (understanding), reference to cases studied, construction of reality, and using texts as empirical material. From these features, various questions emerge. How can one understand the process of constructing social reality in the phenomenon under study but also in the process of

studying it? How is reality represented or produced in the case that is (re) constructed for investigative purposes? What is the relation between text and realities?

Texts serve very important purposes in the process of qualitative research. Interviews comprise data which are transformed into transcripts (texts), and interpretations of them are produced afterwards. In observations, field notes are often the database. In many understanding studies, research starts from recording natural conversations and situations to arrive at transcriptions and interpretations. In all such cases of understanding studies, we find text as the result of data collection and as the instrument for interpretation. If qualitative research relies on understanding social realities through the interpretation of texts, two questions become especially relevant: One, what happens in the translation of reality into texts; two, what happens in the retranslation of texts into realities, or inferring from texts to realities. In this process text is substituted for what is studied. As soon as the researcher has collected the data and made a text out of them, this text is used as a substitute for the reality under study in the further process of research.

Text is considered by the researchers in the field of understanding studies as well as the social scientists as the means of making a world of experiences. The world is looked upon as socially constructed through different forms of knowledge

- from everyday knowledge to science and art as different 'ways of world making'. Of late, social scientists have been using 'mimesis' in world making in the texts as a means of transformation of worlds into symbolic worlds; they treat the concept of mimesis as a general principle with which to map out one's understanding of the world and of texts. In applying these considerations to qualitative research and to the texts used within such research, mimetic elements can be identified in the following respects:
- in the transformation of experience into narratives, reports, etc. on the part of the persons studied;
- in the construction of texts on this basis and in the interpretation of such constructions on the part of the researchers;
- finally, when such interpretations are fed back into everyday contexts, for example, in reading the presentations of these findings.

Mimetic processes can be located in social science understanding as the interplay of construction and interpretation of experiences. Mimesis includes the passage from pre-understanding across the text to interpretation. The process is executed in the act of construction and interpretation as well as in the act of understanding, which as an active process of construction involves the one who understands. According to this concept of mimesis, it extends to understanding as a whole and thus also to understanding as a concept of knowledge in the framework of social science research.

A central step in understanding studies is how to formulate the research questions. The researcher is confronted with this problem not only at the beginning, when the study or the project is conceptualized, but in several phases of the process: in conceptualizing the research design, in entering the field, in selecting the cases and in collecting data. The formulation of research questions in concrete terms is guided by the aim of clarifying what the field investigation is expected to reveal. The less clearly a research question is formulated, the greater is the danger that the researcher will ultimately find himself in front of mountains of data helplessly trying to interpret them. Research questions are like a door to the research field under study. Whether empirical activities investigated produce answers or not depends on the formulation of such questions. Also dependent on this is the decision as to which methods are appropriate and who (i.e. which persons, groups or institutions) or what (i.e. what processes, activities, etc.) should be included in the study. The essential criteria for evaluating research questions include not only their soundness and clarity, but also whether they can be answered in the framework of given and limited resources (time, money, etc.)

In the understanding studies one of the most important tools of collecting verbal data is the semi-structured interview which includes focused interview, semi-standardized interview, problem-centred interview, expert interview as well as ethnographic interview. These are various versions of the semi-structured interview and this may be considered as one of the significant methodological bases of qualitative research. It is characteristic of these interviews that more or less open questions are brought to the interview situation in the form of an interview guide. It is hoped that these questions will be answered freely by the interviewee. The advantage of this method is that the consistent use of an interview guide increases the comparability of the data and that their structurization is increased as a result of the questions in the guide. If concrete statements about an issue are the aim of the data collection, a semi-structured interview is the more economic way. If the course of a single case and the context of experiences is the central aim of research, narratives of the development of experiences should be considered as the preferable alternative.

In the understanding studies when the opinions and attitudes about taboo subjects are investigated, the use of dynamics of a group discussing such topics seems to be more appropriate than a clear and well-ordered interview situation. The methods used in such situations are group interviews, group discussions or focus groups. Such group procedures stress different aspects of the task of going beyond interviewing individuals to data collection in groups. Sometimes it is the reduction in time spent interviewing – one group at one time instead of many individuals at different times – which is important. The verbal data gathered through such group processes are more complex than in the single interview. The advantage of this complexity is that data are richer and more diverse in their content than in an individual interview. The problem of this complexity is that it is more difficult to locate the viewpoints of the individuals involved in this common process of meaning–making than in an individual interview.

The role of visual data gathering like observation is central to the methodology of qualitative research. Observation may be non-participant in which case the researcher refrains from interventions in the field. Or, it may be participant observation which is a field strategy that simultaneously combines document analysis, interviewing of respondents and informants, direct participation and observation in the field, and introspection. Ethnography is another method in which observation and participation are interwoven with other procedures; the ethnographer participates, overtly or covertly, in the subjects' daily lives for an extended period of time, watching what happens, listening to what is said, asking questions; in fact collecting whatever data are available to throw light on the issues with which he or she is concerned. These methods and approaches in understanding studies try to accomplish the goal of gaining an insider's knowledge of the field through the researcher's increasing assimilation as a participant in the observed field. Second-hand observation, using photographs, films or videos as instruments of research, has also proved its immense potential in understanding studies. The more sophisticated instruments, both acoustic and audiovisual, have extended possibilities for recording events leading to an essential influence on the developments of qualitative research. The use of recording devices such as tapes and video recorders has been widespread in daily life itself as well. To some extent, their prevalence has made them lose their unfamiliar character for potential interviews or for those people whose everyday life is to be observed and recorded through their use. It is these gadgets which have made possible some forms of analyses like conversation analysis.

Last but not the least; mention must be made of a potentially far-reaching technological change that has begun in the analysis of data, which is linked to the introduction of computers in qualitative research. With help of various software programmes the computer can perform important functions in qualitative research. These are making notes in the field, writing up or transcripting field notes; editing, correcting, extending or revising field notes; coding text to permit later retrieval; storage - keeping text in an organized database; content analysis, data display, graphic mapping - creating diagrams that depict findings or theories; preparing interim and final reports.

Check Your Progress

Notes: a) Space is given below for writing your answers.

b) Compare your answers with those given at the end of the unit..

4. Discuss the nature of relationship studies.

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5. Describe the significance of developmental studies in education.

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3.7 STUDIES IN EDUCATION: COMBINATION OF PERSPECTIVES

In earlier sections we have seen there may be different types of studies in education, namely, Relationship studies, Developmental studies and Understanding studies. These different kinds of studies in education may have different perspectives, approaches and methods. This arises out of the fact that education as a discipline is not unitary in character. The problems of educational research have interfaces with other disciplines and can be solved by fruitfully adopting approaches or methodology of research in those disciplines. This means that the studies in education will not only have different perspectives for different problems under study but also will try to combine or synthesize different perspectives even for a particular study if there is such a need. Which aspect of education is studied more intensively through a particular research would depend upon the view–point of the researcher about education and the approach he adopts to investigate into that. Accordingly, appropriate methodology will be devised and adopted to tackle problems of educational research of a particular orientation. Once this is adequately recognized, a great scope to study educational problems from various points of view with different methodological approaches is opened up. This gives a greater scope of understanding educational problems in a much wider perspective.

In respect of educational research it may be noted that its substance is from the area of education which is much wider in scope than the content area of any other discipline since it aims at dealing with human life in many aspects and its total development. Therefore, inherently it has scope and also the necessity of different approaches and perspectives to research to be brought to bear upon it. These approaches need to be applied appropriately in order to deal with educational problems and understanding them from varied points of view, and levels of understanding. This means that the levels in educational activity have to be perceived in terms of operations at concrete level and gradually reach the levels of abstractions which culminate into its conceptualization adequately. For example, in a teaching-learning situation, a researcher may like to understand a teacher's behaviour and its effectivity. In such a pursuit, he may have the research endeavour to identify the needed professional know-how for teachers, like to see it in terms of various skills or competencies, develop necessary instructional material to provide the teachers sufficient training and orientation which would enable them to use identified skills efficiently and effectively. Up to this stage of the study the researcher may well adopt the positivistic perspective.

But when the researcher attempts to understand as to what goes on in the teacher's mind which guides him to make an instant choice regarding the use of various skills already developed in him, how he reacts to various contingent situations created in the instructional process, what he experiences in the total situation, how he organizes his internal resources to cope with the situation, how he judges learner's difficulties, how adequately equipped he feels when he responds to these actual situations, are some of the many questions that a researcher has to grasp before he can provide adequate explanation of his response to the situation. This seems to be more appropriately done when the researcher looks into the teacher's 'experience' which he alone possesses in all its details and linkages; and this can be extracted and comprehended through a very intimate interaction between the two (the teacher and the researcher) with full empathy developed on the part of the researcher. Calling into service such an approach would amount to being ready to follow the phenomenological perspective for this part of the study. Thus, this is an example which clearly shows an attempt at combining different perspectives under a particular educational study.

3.8 LET US SUM UP

The content of this unit includes the impact of knowledge generation through scientific approach which ultimately opened up different newer fields of study. In reaction to positivistic paradigm, non-positivistic approaches gradually made their presence felt in social sciences and humanities. As a result, the validity of many existing concepts was questioned. By virtue of the wide and composite nature of education, studies in the discipline accepted plurality of perspectives, even attempted to combine different perspectives.

3.9 UNIT-END ACTIVITIES

1. Make adequate library study to prepare a brief note on two each from 'new areas of study', 'new concepts / constructs' and 'new paradigms' in social sciences (education included).
2. Prepare abstracts of doctoral theses in education, one each from the categories of relationship study, developmental study, and understanding study.
3. Interview ten research students in education regarding all aspects of their research study. From the interview reports categorize which researches are included in the three types of studies mentioned under 2.

3.10 POINTS FOR DISCUSSION

Group discussion may be held on the following topics.

1. Can quantitative and qualitative perspectives be combined under a particular research?
2. Is it reasonable to generalize in qualitative research?
3. The days of positivistic approach to research in education are over.

3.11 SUGGESTED READINGS

- Cohen, Louis and Manion, Lawrence (1994): *Research Methods in Education.* Fourth edition, New York: Routledge.
- Van Dalen, Deobold B. (1979): *Understanding Educational Research: An Introduction.* Fourth edition, New York: McGraw Hill Book Company.
- Flick, Uwe (1996): *An Introduction to Qualitative Research.* London: Sage Publications.

- Ghosh, B. N. (1999): *Scientific Method and Social Research.* Revised edition, New Delhi: Sterling Publishers Private Limited.
- Keeves, John. P. (ed.), (1990): *Educational Research, Methodology, and Measurement: An International Handbook.* New York :Pergamon Press.
- Yadav, M. S. and Mitra, Shib K. (1989): *Educational Research: Methodological Perspectives.* Baroda : CASE, M.S. University.

3.12 ANSWERS TO CHECK YOUR PROGRESS

1. Positivistic paradigm of knowledge generation is based on the philosophical ideas of the French Philosopher, Auguste Comte. who considered observation and reason as the means of understanding human behaviour. In this approach all genuine knowledge is based on sense experience and can be only advanced by means of observation and experiment. It has been described as a 'tough – minded orientation to facts and natural phenomena'.
2. The following are the limitations of Positivistic Paradigm:
   (i) The theoretical perspective which has dominated the positivistic paradigm seeks the facts or causes of social phenomena with little regard for the subjective states of individuals.
   (ii) In positivistic paradigm social facts or social phenomena are considered to be the things that exercise an external and coercive influence on human behaviour.
   (iii) The positivist searches for facts and causes through methods such as survey, questionnaire, etc which produce quantitative data. It allows him to statistically prove relationships between operationally defined variables, thus reducing human behaviour to statistical aggregates.
   (iv) Positivistic paradigm presents a misleading picture of the human being because it concentrates on the repetitive, predictable and invariants of the person (i.e. on his visible externalities) to the exclusion of the subjective world. It ignores the world in which the meanings are developed by active subjects through their life experiences.
   (v) The positivist puts more effort in scientific experimentation which are likely to end up with a pruned, synthetic and constructed version of the whole social reality.
3. The three field methods are:
   (i) Case study method.
   (ii) Projective techniques
   (iii) Anecdotal records
4. The relationship studies gather facts to obtain an accurate description of existing phenomena and then attempt to trace the relationship between facts which provide deeper insight into the phenomena.
5. Developmental studies are useful in investigating the characteristics of children and the ways in which these characteristics change with growth and development. Such studies are concerned not only with the present status and interrelationships of phenomena but also with changes that take place as a function of time. The educators, teachers and counselors gather reliable information about the intellectual, physiological, and emotional growth of children at various ages, how they differ from one another within certain age levels; such information is useful in taking decisions about the type of curriculum, textbooks and teaching methods.