CHAPTER I

THEORETICAL REFERENCE

(FRAME OF THE STUDY)
CHAPTER I

1 INTRODUCTION

Teaching is the oldest, most indispensable and inevitable of all the professions in the world. Teacher education is a complex activity. "A sound programme of professional education of teachers is essential for the qualitative improvement of education," Indian Education Commission (1964-1966).

No educational programme can be a success without the proper education of teachers. Prof. Humayun Kabir rightly stated, "Without good teachers, even the best of systems is bound to fail. With good teachers, even the defects of a system can be largely overcome." The whole system of education revolves around the teacher. He is the spiritual and intellectual father of students. The place and the importance of the teacher in a society can never be overestimated, as a person who imbibes, interprets and disseminates the culture and traditions of the past. He influences his pupils by what he says, and even more by what he does. He leads the students from the darkness of ignorance to the light of knowledge and understanding, and helps to keep the lamp of civilization burning.
It is truism to say that the quality of education, in a society, depends upon the quality of teachers and the quality of teachers in turn, depends upon the training or education, the teachers themselves have had. The Secondary Education Commission rightly observed,

"We are, however, convinced that the most important factor in the contemplated educational reconstruction is the teacher, his personal qualities, his educational qualifications, his professional training and place that he occupies in the school as well as in the community."

This indicates the purpose and effectiveness of teacher education is a matter of great social concern. Even 'Learning to be' emphasises the task of a teacher.

"One of the essential tasks of the educators at present is to change the mentalities and qualifications inherent in all professions; thus they should be the first to be ready to rethink and change the criteria and basic situation of teaching profession, in which the job of educating and stimulating students is steadily superseding that of simply giving instruction."

The concept of teaching itself is undergoing a change. Teaching now-a-days is considered more than
imparting knowledge and communicating information.
It is considered as helping learners to learn by themselves, to acquire skills and develop attitudes and values in the changed social context. A teacher is not merely a communicator of knowledge, he has to be a Director of Learning, a transmitter of culture and values. If education to-day is to be a powerful instrument for social change, the teacher in his turn has to be an agent of the change, a social engineer and an architect of the future society. It is rightly said that to enable the teacher to play his desired role as a catalytic agent, the programme of teacher education must take into account the future needs of the society.

In the present study, the systems approach has been used to study the functioning of Elementary Teachers Training Institutions which train teachers for Primary schools. Teacher education is viewed as system which has a set of inputs, process and outputs.

1:2 TEACHER EDUCATION - AN OVERVIEW

Teacher education is a relatively little researched area. It has, due to its importance, attracted the attention of several committees even after a thorough probe and recommendations by the Education Commission
The University Grants Commission (UGC) has a panel on teacher education and the Union Ministry of Education has constituted a National Council for Teacher Education (NCTE) in the National Council of Educational Research and Training (NCERT). In spite of these committees and NCTE teacher education has not been taken very seriously by all concerned. Unfortunately the professional education of teachers appears to have been comparatively neglected in the Post independence period.

Teacher education has been a cause of serious concern. Despite several Commissions and Committees the state of affairs in teachers training institutions remains pretty much the same as it used to be three or four decades ago. There is little doubt that the teacher education jargon has undergone considerable transformation that is we do not say 'training' but 'education', not 'practice teaching' but 'student teaching' etc. Terms like 'micro teaching', 'macro teaching', 'team teaching' are understood by all. Yet unfortunately things remain the same within the four walls of 'teacher education' institutions.

Teacher education suffers from many drawbacks. Commenting upon the state of affairs in present day teacher training institutions in India, Buch and Yadav have pointed out that much dissatisfaction has been shown about the training provided to the teachers. The trainees are not satisfied,
the consumers are not satisfied and more than this, even the trainers are not satisfied with training programmes. Yet this dissatisfaction has not led to significant improvement in the area of teacher education.

Jackson (1968) interviewed experienced teachers after training. They reported that during the teaching process the concepts they used to interpret pupil behaviour were simple and included a few elements of sophisticated knowledge found in studies of Educational Psychology. Some other student teachers report that whatever is taught in the theory classes is in the form of abstractions and they find it difficult to simplify the generalizations into concrete situations.

Teacher education stands as an isolated ivory tower in our social set up. The present system of teacher education is blamed not only for ignoring actual needs of schools for which they prepare their product but also for showing the least concern for the community in which teachers will work after their professional preparation. No understanding or skills are provided to the student teachers to enable them to play a leadership role in the community which operates and supports schools. Teacher education remains to be as faithful to its tradition and mechanical as it could possibly be.
Flanders (1967) observed, 'the point is that much of what is learned in education courses is neither conceptualized, quantified, nor taught in a fashion that bridges a gap between theory and practice.' Desai (1969) mentions that a good deal of what is taught in teachers training institutions is not directly useful to the trainees as a perspective teacher, and a good deal of what is expected of a teacher in school is not taught in it.

The teacher education in India has also no reference to new knowledge based on scientific research in teaching learning process. Except for a repetition of Herbertian steps, there is nothing new. Practice teaching is done in a traditional way. The curriculum, practicals and annual examinations are organised in the same fashion as was done in the past decades.

To sum up teacher education in India has not kept pace with changing times and has lost practical utility from point of view of schools and society. The frequent complaints of schools that the trained teachers are not very resourceful and helpful to them bear out the inadequacy of the programme of the teacher education. Education Commission (1964-66) remarked on teacher education,
Training institutions for Primary and Secondary teachers have remained isolated from the main stream of the academic life of the University, as well as from the daily problems of the schools. The quality of teachers training institutions remains, with a few exceptions, either mediocre or poor, competent staff are not attracted, vitality and realism are lacking in the curriculum and programmes of work which continue to be largely traditional, and set patterns and rigid techniques are followed in practice teaching with disregard to present needs and objectives. A Comprehensive improvement is urgently needed.

We need giving urgently serious thought about the improvement of teacher education.

133 OUR URGENT NEED

Not a single day passes without some one or the other, connected with education, complaining of falling standards in educational institutions. Of all different factors which influence the quality of education and its contribution to national development, the quality and competence of teachers are undoubtedly the most significant. The quality and competence of these teachers depend upon the programmes of teacher training institutions. The same point has been stressed by Indian Education Commission (1964-66)
when it noted, "First-rate teacher training institutions can play a crucial role in the development of education."

The quality of teacher education needs much to be desired. The Indian Education Commission (1964-66) also voiced its concern about the quality of teacher education when it said,

"That the quality of the existing programmes of teacher education should be improved and in the absence of quality teacher education becomes not only educational waste but a source of overall deterioration in educational standards."

In theory the responsibility of bringing about qualitative improvement in education, to a greater degree lies on teachers training institutions but in practice it seems that these teachers training institutions are producing teachers of poor quality. The production of quality teachers should be the major concern of all teacher education programmes. Number of children entering schools is increasing day by day. The quality and quantity do not easily go together.

The focal importance of the teacher is not new to educational thinking. But it seems that the crucial role of the teacher in improving the quality of education has not yet been fully realised. To-day teacher is required
to be something of a blend between a gardner and an incendiary. His job is to set the child's mind on fire. The teacher to-day in the Primary school in every country is a person who is guiding the development of human life. Educational systems all over the world are facing resources crisis and the paucity of additional resources is a natural corollary to teacher education. Yet on account of pressure on schools to admit more children demand for more teachers can be expected to keep on rising, while cries for 'quality teacher education' grows in intensity. It is essential to reconcile the competing claims of quality and quantity.

It is evident from the above discussion that the whole system of teacher education particularly at Primary level is not functioning well. Every system has inputs, process and outputs. Quality of teacher education can be improved by maximising the input-output relationships and this brings to sharp focus to adopt some new strategy to improve the quality of teacher education.

**THE SYSTEM ANALYSIS APPROACH**

In an age when problems deem to generate fast than we can indentify them, and change appears to be the only certainty, we are eager to find ways to define and
resolve our problems - complex as they are and to cope with change perpetual though it may be.

The new strategy demands far reaching innovations and drastic changes in the customary way of doing the things. The new strategy must pay close attention to quality as well as to quantity. There is no standardized strategy to improve the quality of teacher education. However, there is one approach which the strategies in teacher education must emphasize in years to come. It should penetrate deeply beneath the outer surface and aggregate dimensions of the system, so that function of the system may be improved.

Thus planners in the field of teacher education who have been pre-occupied in the past with the process of expansion should now pay their attention to the improvement of the functioning of teacher education system. It implies that they should get at its inner life and should not merely confine largely to the outer shell and broad aggregate dimensions. The needed shift of emphasis in strategy must more and more become involved with the redesigning of the process by inventing new learning systems and sub-systems, testing them out, modifying them as needed, and then promoting their wider application.

One of the necessary steps towards indentifying the new strategy is to develop better instruments for assessing
the functions of educational systems and their various parts. Here again one might find some useful clues from other fields. This time from the field of medicine and more particularly from what a doctor does when he gives his patient an annual check-up. The doctor cannot know everything about the patient, nor does he need to. He employs a series of critical indicators, heart-beat, blood pressure, urine analysis, blood count etc. depending upon the particular case and from these he makes a diagnosis or to how well or poorly the patient's system is functioning. This analogy should not of course, be pushed too far, but it is worth asking what sorts of 'indicators' the system of teacher education would need to give itself an annual check up.

The doctoral strategy in analysing the human body should be tried out by modern educational administrators in the analysis of organizations and systems. Thus approach is known as systems analysis approach. Such an approach has been found quite useful in the analysis of social systems while critical indicators of the system and their functional processes may vary from context to context the strategy remains the same. By extension this is also true of a system analysis applied to teacher education systems. It focuses on the relationships of
things. It seeks to improve a whole series of relationships between its various levels and internal working parts on both the input and output sides. These relationships now badly out of the line must somehow be resorted to a better balance and to a mutually compatible rate of improvement. In the present research an attempt will be made to focus on relationships and to see the problem as a whole by applying the systems approach. It is essential to explain about systems approach, meaning, properties, features, advantages etc. and following few pages are devoted to this.

4:4:2 THE SYSTEMS APPROACH - MEANING :

One of the important revolutions in the human sciences during the last few decades has been the discovery of an approach that permits the analysis, not of isolated components but of the whole. Such an approach helps to think not in a fragmented manner but in a gestalt way. Such an approach offers a larger perspective.

The systems approach to the development of systems offers a decision making structure and a set of decision making strategies. It makes available for the designer a self correcting logical process for the planning, development and implementation of man-made entities. It provides a procedural frame work within which the purpose
of the system is first specified and thus analysed in order to find the best way to achieve it. On the basis of this analysis the components that are most suitable to the successful performance of the system can be selected.

The success of the use of systems approach has been clearly manifested in industry, business and government. It is a pragmatic application of the scientific methods and tools.

The systems approach is an attitude of mind - a way of seeing the world. The systems approach appears to be the application of the Systems view, or system thinking to human endeavours. An analysis of systems leads to an

Understanding of the

System Concept
Which, if integrated into our thinking, can become a

System View
Which, if applied becomes the

System Approach to the -

1. Analysis of systems
2. Solution of problems
It may be defined as an array of inter-related and interdependent components designed to accomplish a particular objective according to plan. The components are sub-systems and the point of common contact is referred to as an interface. The system approach, thus, is a way of thinking, a mental frame of reference, which can be used by the administrator in his traditional functions of planning, organising and controlling operations.

System analysis has become quite fashionable as research technique. Scholars in many disciplines are increasingly choosing to regard intricate topics of human concern as systems.

Human progress has taken place in developmental stages. This tenet may be illustrated by an example. The progression begins with an undifferentiated global mass that can be differentiated gradually in terms of distinct parts. The differentiated parts are then analyzed as contributing elements of some integrated system. Thus, the original mass can be observed as a whole comprising complex, inter-related components.

The study of organisms, whether they be biological, physical, social or whatever reveals the same developmental stages. The history of social theory reflects the belief that societies evolve in the same fashion as do organisms. System analysis provides a framework for a basic conceptual organization.
and reclassification of the differentiated parts of any system.

1:4:3 **HISTORY**

Credit for the term General System Theory is given to Von-Bertalanffy.

System is defined in the dictionary as an assemblage of objects united by some form of regular interaction or interdependence, an organic or organized whole as the solar systems or a new telegraph system. There are differences in the kinds of system. The solar system is a natural system, a telegraph system is designed by man.

The special meaning of the term systems and such related terms as systems concept and systems approach emerged during and after world war II as a result of research and development of complex man-machine systems. In discussion of system the design of weapons systems is generally referred. A classic example is the development of combat aircraft designers realised that they could not simply take an existing airplane and add weapons, bomb and fuel storage space, communication and detection equipment and protective armour. Adding such equipment at random restricted the plane carrying capacity, speed, maneuverability, range of flight and other vital functions. What emerged from this realisation was a
new method of planning and development in which designers learned that they first had to identify the purpose and performance expectations of the system before they could develop all the parts that made up the system as a whole. It is the system as a whole and not a part separately, but the way they interact and are integrated into the system for the purpose of achieving the goal of the system.

From the example it can be generalised as deliberately designed synthetic organisms comprised of inter-related and inter-acting components which are employed to function in an integrated fashion to attain pre-determined purposes. Therefore the best way to identify a system is to reveal its specific purpose.

Since world war II, this developmental concept has been used with ever increasing sophistication and it has rapidly expanded into new areas. Its military, industrial and business application are numerous.

WE ARE SURROUNDED BY SYSTEMS:

System surrounds us everywhere. In the home the housewife, the cooking equipment, the lighting, heating, water supply, storage and disposal facilities, the food, the dishes and the cook-book all interact in a planned way to make up a meal production system. Meal production is purpose of the system. The stove, the refrigerator, the
plumbing, lighting, heating are components of the system. Their functions are determined by the purpose of the system, which is attained by the execution of processes in which components of the meal - production system engage in order to produce a pre-determined outcome - edible food.

A further analysis suggests that the purpose of a system in this case - meal production - determines the kinds of processes in which the system has to be changed. In the case of meal production system, the processes will include: Planning the meals, acquiring, storing, preserving and preparing the food, as well as sanitation and environmental control. These processes are further structured into sub-processes. For example, sanitation implies cleaning and disposal, the environmental control devotes the assignment of space and provision of heat, light and ventilation etc. The procedures that need to be carried out in order to achieve the purpose of the system will suggest the selection and employment of specific means or components. These components will be selected on the basis of their assessed capabilities to carrying out the processes. For example, food acquisition requires the introduction of such processes financing, selecting sources of supply, purchasing, delivery etc. The components employed in the process of selecting sources of supply may include the wife, husband team, other members
of the family, friends, newspaper and so on. The process of delivery can be performed by members of the family with the family car, by delivery man, by the milkman and his truck or by some other means.

This example points out three main aspects of systems—purpose—process—content. The aspect is that systems have purpose. Systems are built from parts or components, and the sum of these is the content of the system. The content of a system is organized for the accomplishment of a specific purpose. The operations and functions in which components are engaged in order to accomplish the purpose of the system add up to the process of the system.

THREE THINGS:

Systems thus have purpose—process—and content. The sequence of purpose, process and content is important because it implies priorities. Systems can be identified by their purpose. Purpose tells us what has to be done, it determines the processes that have to be undertaken. The content the parts that comprise the system is selected for its ability to accomplish the procession required in order to achieve the purpose of the system.
WHAT IS A SYSTEM?

The term 'system' carries a connotation of wholeness, inter-related of parts and self regulation. It is dynamic, complex, integrated whole consisting of self regulating pattern of inter-related and inter-dependent elements to achieve the pre-specified goal.

Systems are assemblages of parts that are designed and built by man into organised whole for the attainment of specific purposes. The purpose of a system is realised through processes in which inter-acting components of the system engage in order to produce a pre-determined output.

In common usage the word 'system' refers to widely separated concepts. Engineers are concerned with systems functionally related aggregate of technological devices. Social scientists speak of economic and political systems philosophers about systems of thought.

One may accept the definition of a system as (1) something consisting of a set (finite and infinite) of entities (2) among which a set of relations is specified so that (3) deductions are possible from some relations to others or from relations among entities to the behaviour or the history of the system.
According to this definition 'social system' qualifies as system. However in the context of a systems theory, 'Social system' would have to be defined every time some class of entities (individuals, families, institutions) and relations among them (Communication, Channels, influence obligations) are singled out for attention.

1:4:7 SYSTEM DEFINED:

The teaching learning process is an arrangement whereby a teacher and student can interact with one another. The teacher should try to see that his interaction facilitates learning. According to Davis (1974) a learning system is an organised combination of people, materials, facilities, equipment and procedures which interact to achieve a goal.

Ranghart: An integrated assembly of interacting elements designed to carry out co-operatively a predetermined function."

Kaufman: "System analysis, the determination of requirements and the identification (but not solution) of problems.

Hall and Fagen (1969):

"A system is a set of objects together with relationships between the objectives and between their attributes."
According to Benghart—

The living organism, the animal or above all, the human body with its control nervous system, as an example par excellence of a system. It is a truism that the human body is a primary source of inspiration for our fundamental notions about systems. An educational system, as a system, obviously differs greatly from the human body in what it does, how it does it, and the reasons why. Yet like other productive undertakings, it has a set of inputs, which are subject to a process, designed to attend certain outputs which are intended to satisfy the system's objectives.

THE SOCIAL SYSTEM AND ITS ENVIRONMENT

A social system is inherently an open system engaged in the processes of interchange (for input-output relations) with its environment as well as consisting of interchange among its internal units. Regarding it as an open system, is regarding it as a sub system of one or more superordinate systems. In this sense, it is interdependent with other parts of the more comprehensive system or systems and hence partly dependent upon them for essential inputs. Hence the dependence of the organism on its physical environment for nutrition and respiration is prototypical.
The problems of the functioning of the system are those concerning the conditions of maintenance and development of the interchanges with environing systems, both inputs from them outputs to them. Therefore, it is its inputs that have primary functional significance for a system.

Purpose gives direction to the whole system. The nature of processes will suggest the kinds of components that are to be employed and will make up the content of the system.

1:4.9 SUB SYSTEM

A sub-system is a part of total system. Each sub-system is designed to carry out a purpose the attainment of which is necessary in order to achieve the overall purpose of the system. Sub-systems operate in an integrated fashion. In a meal production system, planning is integrated with and influenced by food acquisition, which then interact with storage, preservation, preparation and other sub-systems.

The meal production system is in itself a sub-system of a larger system - the home. It is this supra system, the home which the meal production system receives its purpose, resources demands and limitations.
Systems operate in the larger context of their environment. The larger context can be conceived as the supra-systems of a particular system. The context of education is society. Society is the supra-system of education.
The supra system has its own purpose, process and content. The Supra system surrounds the system and interact with it. It is from the Supra systems that the system receives its input.

From society, education receives its purpose as well as it pupils, personnel and material resources. It is into the supra system that the system sends its output. In the case of education these outputs include the person who has been educated and the knowledge that has been developed. It is the environment - the Supra system - that accepts or rejects the output of a system.

Thus, if a system is to maintain itself, it is essential that it ensures the adequacy of its output. In order to ensure this, the system has to provide for a continuous assessment of its output and for a feedback of this assessment into the system.

The social system is, thus a very complex entity. As an organisation of human interests activities and commitments, it must be viewed as a system and in functional perspective. It would be pertinent here to discuss the characteristics and properties of a system.
CHARACTERISTICS OF A SYSTEM:

1. A system is a set of entities together with their properties and the relationships between the entities.

2. The entities that make up a system may be viewed as given to men or constructed by men.

3. The entities of a system are a variety of parts.

4. Properties of entities are their specifications.

5. Relationships of entities are connections between entities.

   (a) In static relationships, the properties of entities do not change with time.

   (b) In dynamic relationship, the properties of entities change with time.

   (c) Environment is a set of all entities that surround the system and the action of which may affect and be affected by the system.

   (d) The boundaries of a system are the regions that differentiate the system from the environment.

PROPERTIES OF A SYSTEM:

1. A system is a multi-system, if it has other systems (sub-systems) as the entities.
2. A system is open, if it has input and output.
   (a) Input is the sending of entities from the environment into the system.
   (b) Output is the sending of entities from the system into the environment.

3. A system is regulated, if it has feedback.
   (a) Feedback is the return of output to the system.

4. A system is adaptive if exchanges between the system and its environment lead to continuance of the system.

5. A system is stable if change in certain system variable remains within definite limits.

6. A system is compatible with its environments, if it survives.

7. A system has wholeness if a change in any entity of the system affects changes in all other entities and affects a change in system action.

8. A system has independence if change in at least one entity alone and does not affect change in system action.

9. A system is degenerated if it has independence in relation to all its entities.
10. A system is centralized if any entity dominates the actions of the system.

11. A system is in progressive segregation, if in time, changes in the system tend towards independence of the system.

12. A system is in progressive systematization. If, in time, independence towards wholeness.

13. A system is State-determined if its uniquely determined path is independent of the way in which the system arrived at its initial state.

Fiorino applies seven principles to systems:

1. All activities within a system are integrated.
2. All parts of a system are mutually dependent.
3. Changes which occur in one part of a system affect other parts of the system.
4. Some method of communication must be available within the system to insure its survival as a viable system.
5. Input into a system must be evaluated to identify conditions which may affect the functioning of the system.
6. Output of a system must be evaluated to insure that the system is accomplishing its purpose.

7. A feedback must be functioning to allow the system to make adjustments necessary for its survival.

ADVANTAGES:

A Regional seminar on 'the application of Modern Management Techniques to educational Administration' was held at Asian Institution of Educational Planning and Administration, New Delhi, on 22nd to 12th Nov, 1970. Report of this seminar gives the following advantages of systems analysis approach to educational problems:

1. Educational administration has to deal with an infinite variety and range of problems, many of which are to a considerable extent amenable to this kind of treatment (system-analysis). The application of this technique could definitively serve to control the limits of irrational decision making and that in any case, System analysis would go a long way in sharpening our understanding of the complexity and inter-relatedness of educational problems.

2. In education we seem to be concerned with solutions without bothering about the exact nature of the problems.
Systems Analysis - on the other hand insists on beginning with the problems and not with their solutions.

3. Education is a system and a set of sub-systems potentially susceptible to analysis design and eventually some optimization. As such there should be more systematic ways of determining the size and mix of educational efforts. Perhaps systems analysis techniques of relating an output to an input can be of help in improving educational effectiveness.

4. If we are bold enough to perceive education as an industry, then systems analysis is the correct procedure to study problems and find solutions to them.

5. It is industrialists and economists who are concerned with the technical education. So why not speak in the language systems analysis which these industrialists and economists know?

1:4:15 MEANING OF SYSTEMS ANALYSIS:

It possesses nearly as many definitions as there are persons who advocate its use. It is a prestigious term used by many in a casual fashion, but it contributed much to various areas of human concern and promise even greater achievements in educational affairs. Dictionary meaning of this term, "A complex unity formed of many diverse parts subject to a common plan or serving a common purpose. It may
be defined as orderly way of identifying and ordering the different components, relationships, processes and other properties of anything that may be conceived as an integrative whole. It provides a basis for the intensive study of complex phenomena that are in some way related within the defined boundaries of a unified system. The system may be physical or non-physical, open or closed, dynamic or static, simple or complex. It contains a supra system and sub-systems. Thus, in a system two or more parts and their relations form a single, identifiable entity. System analysis provides glimpses into its parts and operations.

The task of the systems analyst is to use the existing resources or generate additional ones to create new means-ends patterns and resolve conflict over problems of choice. It is not an easy mission to construct a map of the means-ends hierarchy in a system. System analysis helps to organise human thinking within the framework of reason. Through systems analysis a system is examined not piecemeal where every fact stands alone but as a 'system' with interacting parts that produce their own indications as to whether the interaction is going well or badly.

Things can be viewed from a variety of perspectives.

If we take a group of people through a school they are very
likely to see different things. If we ask them what they
saw, an architect would be likely to report things about
the architecture that other apparently had not noticed.
A sanitation would probably be able to report things about
how clean the school is kept and how the school is kept
clean that others apparently had not noticed. An experienced
teacher would report things that an inexperienced teacher
would not. A fire chief would report some things and a
police chief others. A social worker would report some things
and a parent others. And each perhaps would marvel then
at how much he had missed.

People who marvel at how much things they miss or
marvel at how others can miss what they see so clearly are
likely to appreciate systems approach to problems. It helps
one to view something from one perspective then from another
and yet another, and to finally put the many views together
to form a whole.

Perspective is important. The blind men did not do
that blindly with the elephant. From the story teller's
perspective we could see that their perspective was incomplete
but so was ours. Being far away we could see things they
could not. Being close they could observe things we could
not. They were too close to the problem we were too far away.
If we put together what they reported and what we could report, we would have a fairly complete picture of slightly over half of one side of the outside of one imaginary elephant. By using a systems approach we can do even better for some real educational problems.

A systems approach to teacher education is one in which systems techniques and concepts are used to help, analyse and resolve educational problems. An educational problem is a problem, which educators and those persons connected with education, work to change. For example, teachers work to move students from a state of ignorance to a state of knowledge, from a state of lack of skill to a state of skill. A school board will work to provide good teachers, good materials and a good environment in which students teachers and others will work to resolve their educational problems.

One can approach teacher education as a system by viewing it as a system that is one views Teacher education as a whole and any convenient part of it such as a school district, a school, or a classroom in the same general terms as one views other systems.

What is taken into a system an input and what is put out an output. An input is raw material and output is the product. An input is an uneducated child and the output is an educated child.
An input can be changed in many ways. It may be changed in form as when we would clay into a statue. The means of effecting a change in an input a procedure and the change in an input undergoes a process.

An input-output system is a system in which one or more inputs are changed into one or more outputs.

The functioning of a system is influenced by its structure and can be influenced by any inputs to it. The functioning of a school is influenced by its physical facilities and the number type and quality of students who enter into it.

115. SIGNIFICANCE TO TEACHER EDUCATION:

"Systems analysis would appear to be an intellectual instrument which may be applied to an over-all critical study of an existing educational systems and is likely to suggest new scientifically calculated pedagogic pattern."

(Edgar Feure, 1973, p. 128)

A systems approach is a rational, problem solving method of analysing the educational process and making it more effective. The 'system' is thus process taken as a whole, incorporating all its parts and aspects, including the students, the teachers, the curriculum, content, the
Instructional materials, the physical environment and the evaluation of instructional objectives. Systems analysis attempts to increase educational effectiveness. Professional educators would be less than human if they were not wary of the many brash new offers to solve their problems.

Systems analysis approach and development are high frequency terms in educational circles. People respond to these terms in different ways. Some say they are fads and will soon disappear. Some say these are just new words for things we have been doing all along. Some believe that we can solve our all problems by the systems way. Methods like or similar to the systems approach have been used and are being used by people in education even though not labeled as such.

In assessing the significance of the systems approach to teacher education we should first determine if teacher education is really a system in the sense we are using the term. Teacher education is certainly a man-made synthetic organism with a specific purpose. Its purpose is usually integrated with and influenced by the purpose of its supra-system. It is society from which teacher education receives its input-resources, constraints
and evaluation of adequacy. Education has numerous sub-systems as the instructional sub-system, guidance, ad., and so on. Teacher education is product oriented and its products being the educated man and the knowledge produced through research. Those responsible attempts to maximize output, to improve continuously the performance of the product with the most economical use of resources. We can conclude that Teacher education is a system in our specific sense of the term and that teacher education may, therefore, benefit from the application of the system approach.

The problems in the field of education are very complex. The process of education involves various human beings like students, teachers, parents, educationists, administrators and other members of the community. To effectively deal with the various problems in education, and to plan necessary programmes, the complexity of the problem should be properly appreciated. Any problem in the field of education would have multiple causes and the solution of the problem would require looking at several variables. Such a complexity lends itself to systems approach.
Many educators have turned to the systems approach as it can bring treatment to the complex problems of teacher education. As a result the systems approach is already in use in numerous educational endeavours, projects and programmes.

What is required is a considerable amount of experimentation and testing in the educational applications of the systems approach.

TEACHER EDUCATION AS A SYSTEM

One can put very simply in a capsule form what has just been said so far. A system is a set of parts that are related to each other. Man-made systems are desired to achieve a given purpose or set of purposes. Systems designed to achieve purposes by necessity are very complex. Moreover there is the effect of environment on the individual system and environments are constantly interesting. Hence such systems may be described as open, in contrast to closed machine like systems. Open systems receive support from their environments and return products of greater or less usefulness to their surroundings. Thus the environment provides the systems with inputs and outputs can be identified and measured, they provide useful information about the functioning of the system.
Like other productive enterprises teacher education may be viewed as a productive enterprise. The process of production is analysed by identifying the inputs like students, teachers, money and other facilities which are used by the system. Like the process of production in other enterprises the process of teacher education is also supposed to produce certain output. All these form a dynamic organic whole which implies that there are all kinds of inter-connections between the inputs and the outputs.

It is possible to divide the activity of teacher education into inputs, the process and the outputs which follow the processing of the inputs. Obviously this is often an analogy for what is seen most clearly in industry, agriculture and medicine. In the fields, the seed is sown, fertilisation and cultivation takes place and the harvest is reaped. In industry iron ore and coal and various other things go into a furnace, it is all boiled up and steel emerges. It would be perfectly possible to talk about the health service as a system into which labour of doctors and nurse and many thousands of people together with the building that they use and all the drugs, sheets and food are measured as inputs, the process of dealing with the
patients is the process and the recovery of patients would be the output.

This, however, is not the way one would customarily view teacher education. Even if it is a system, it is not treated as one. But it is perfectly acceptable to talk by analogy about the input the process and output of teacher education. The inputs into teacher education are resources, human and non-human. The process of teacher education what goes on while inputs are being used the output is something that is extra-ordinarily difficult to be precise about. In one sense it is the things that every body has learnt in that year. In another sense it may be every body who has passed an examination in that year. In still another sense, it may be change in perceptions habits, interests, attitudes etc.

Now there are three concepts that are central to teacher education system (1) Input
(2) Output
(3) Functioning, operations or processes.
Inputs are that what we put into a system. Process is what goes in a system. Output is the product of a system. A system draws input from the environment and gives output to the environment. A system has to operate within the confines of the environmental context. A system can't revolt against environmental constraints. The prime inputs into teacher education system are human and non-human material. Process transforms these inputs into outputs. Teacher education derives inputs from feedback from the environment that is reports on the performance of teachers in schools as well as a sense of accomplishment among members upon realizing that the objectives of the system are being fulfilled. These inputs are provided by the environment in the form of human and material resources for the operation of the system. Like other social systems, teacher education is neither self-sufficient nor self-contained. It draws its input from the environment and thus depends upon it for its survival, but it also exports output that is useful to the environment.

Just like a human system that needs to regulate its body temperature to remain in good health, teacher education system needs to sustain a dynamic equilibrium in order to function properly.
Teacher education system is said to be in dynamic equilibrium when the relationship of input-output is in favourable balance—when it is not, disequilibrium results and its functioning is affected accordingly.

It may be conceptualized that teacher education is a complete social system which is in continual process of resource interchange with its environment and also within the system.

The central concept is the relationship between input-output. Teacher Education has a set of inputs which are subject to a process, designed to attain certain output. These form a dynamic organic whole and if one is to assess the functioning of the system in order to improve its performance, the relationship between the inputs and outputs must be examined in a unified vision.

Teacher education, therefore, consists of mutually interacting components which together form desired function. Its elements do not function in isolation because of their inter-relatedness. Hence conceptualizing teacher education as a 'system' provides a useful insight into its functioning.

A systems analysis, as used here resembles in some respects what a doctor does when he examines the most complicated 'system' of all a human being. It is neither possible nor is it necessary for the doctor to have complete
knowledge of every detail of a human being's system and its functional process. His usual strategy of the diagnosis has been already referred.

The physician's strategy in analyzing human being has been adapted in this investigation in its systems analysis. Since the quality of teacher education is the function of quality and quantity of inputs, so inputs like teachers, students, building, equipment, library, finance etc. are studied. In order to apprise the functioning of the system, the input-output relationship have been examined.

Teacher-education in India is largely offered at three levels, viz. Nursery and Kindergarten, Primary and Middle, and the Secondary. There are a few institutions at the Nursery level because its importance remains yet to be fully acknowledged. The pattern of Primary Teacher Education varies from State to State. In most States it is a two year course after Higher Secondary or Matric. It is also known as Junior Basic Training (J.B.T.) Course. In Punjab J.B.T. Classes are either run in separate schools or are attached to High/Higher Secondary Schools. Once these were also attached to training colleges. In Punjab the duration of the course is two years. Classes for
training Junior Basic Teachers had been closed, as there were about 50 thousand J.B.T. unemployed teachers in Punjab in 1968. With the expansion in elementary education since 1972, particularly because of the additional enrolment of children between 6 to 11, a shortage of such teachers appeared imminent. To meet this need, once again in 1973-74, Government started these J.B.T. Schools. Now all are Govt. controlled institutions at least one in each district.

B.Ed is designed to meet the requirements of 9th and 10th classes. M.Ed. is a Post-B.Ed. degree.

As discussed earlier that teacher education is a system and certainly a man-made synthetic organism with a specific purpose. These institutions (J.B.T) prepare teachers for Primary schools and a complete system in itself, like any other system. These institutions receive inputs from the society which is supra-system. These inputs are put into process and output is trained teachers which are sent in society and again they become the inputs. In this way the cycle goes on.

There are three concepts that are central to teacher education system (1) Input (2) Output (3) Processes. Inputs are that what we put into a system process is what goes in a system. Output is the product of a system.
A system draws input from the environment and gives output to the environment. A system has to operate within the confines of the environmental context.

In order to see how Elementary Teachers Training Institutions are functioning, it is essential to see if there is a balance between the inputs and outputs. It is said to be in dynamic equilibrium when the relationship of input-output is in balance - when it is not, disequilibrium results and its functioning is affected accordingly.

1:3:1

There are many inputs into the process of teacher education. In the present study only nine inputs are taken.

Thus training and education is the prime object of the system and in the end they are its prime outputs.

The following are the inputs taken in the present study:

1:8:2 STUDENT TEACHERS INPUT:

Student teachers are the prime inputs into the system of teacher education. They are like a raw material which are turned out by the teachers training institutions as a finished product. As the proper functioning of an educational
institution largely depends upon the quality of its teachers. It is essential that sufficient supply of the right quality of people are available to the teaching profession. The concern for quality in education has led the researchers to analyse its reasons. One of the reasons for the low quality of education is that teachers coming out of the teachers training institutions to operate the system are not qualitative and the cause of the low quality of teachers may be ascribed in the selection procedure in teacher training institutions. Thus it is essential that more emphasis is laid in future upon an objective selection procedure for admission to these institutions. This will help to select the candidates for entrance in the teaching profession, thereby excluding who are misfits for teaching.

Research studies do not provide a complete scientific basis for Pre-service selection of teachers. We do not have any valid and reliable criterion to depend upon. In some countries, teachers training institutions are taking into consideration the various intellectual, social and emotional factors as a basis for pre-service selection.

At present the best criterion is the approach of combining traits and characteristics with weightage assigned to each of the traits and characteristics. This gives student input index. They have been measured and described through a self prepared questionnaire.
Teacher educators are the most crucial input into the system of teacher-education. It is also the most expensive input. This is the cost which is increasing rapidly. 60% to 70% of amount is spent on teachers' salaries. When so much is being spent on teacher salaries, it is now felt that teacher training institutions should get the finest pickings of the available men power supply.

Those who are concerned with the functioning of teacher training institutions feel particularly critical of the failure of teacher-educators to maintain quality in teacher-education. They are blamed for producing low quality of teachers. In order to have quality output there must be an increase of input into Elementary Teachers Training Institutions of first rate teacher-educators.

There is a dearth of able teacher-educators. The quality of teacher-educators input does not depend merely upon the academic and professional equipment but also to a great extent on the conditions under which they work. These conditions relate to load of work, the environment, the working conditions, climate of the school, effective modes of communication, involvement in policy making, academic freedom they enjoy, promotion based on merit etc.
Studies relating to salary, social background, previous educational experience, age, sex, concept and attitude towards profession have shown that these factors have important bearing on the quality of teachers entering into teachers training institutions.

The approach adopted by investigator is to combine all the traits and characteristics and then assign weightage to each trait and characteristic. In this way a teacher educator index was prepared.

1:8:4 **ACADEMIC MOTIVATION**

It has been vaguely visualised as level of pupil's motivation for learning. Motivation gives both direction and intensity to the learning behaviour of an individual and it is an essential condition for effective learning. It also implies some type of driving force within the individual which can have a positive or negative direction. It is a desire to do good work at school or desire for scholarly career.

It is assumed that there exists intimate relationship between the academic motivation as an input and its effect on the achievement of students. It is a central problem in the field of education that is how to motivate the students.
In order to know level of academic motivation of student teachers Junior Index of Motivation (Jim Seale) adopted Form (F) was used.

LEADERSHIP STYLE:

Leadership style very much affects the performance level of institutions. Someone has said, "As is the Headmaster so is the school." This statement has a deep meaning. It means that the success or effectiveness of the school is largely dependent upon the fact how the head of the institution functions. Generally it is observed that when good leadership is provided to a particular institution it shows tremendous improvement and sometimes inspite of the vast resources of men and material, schools on account of the poor leadership have shown poor results both in terms of quality and quantity. In the opinion of the present investigator, the factor of leadership style can go a long way in improving the performance of an educational institution.

It is the pattern of leader behaviour formally designated as head of an institution.

It has been measured through Leadership Behaviour Description Questionnaire (LBDQ) developed by the Personnel Research Board, Ohio State University.
Teacher Morale:

Another input taken in the present study is teacher morale which is quite important for raising the academic performance of an educational institution. Teacher morale is a sort of 'we' feeling a spirit which affects the performance of the group in achieving the goals of the institution. It is prevailing mood and spirit conducive to willing and dependable performance. High morale is defined as a confident spirit of whole-hearted co-operation in a common effort.

Morale is a disposition on the part of a person engaged in an enterprise to behave in ways which contribute to the purposes for which the enterprise exists. When this disposition is strong, morale is said to be high and when the disposition towards the achievement of common purposes is weak, morale is said to be low. Morale refers to the professional interest and enthusiasm that a person displays towards the achievement of individual and group goals in a given job situation.

It is assumed that teachers having high morale can contribute a lot in improving the functioning of Elementary Teachers Training Institutions. Purdue Teacher Opinionnaire (P.T.O.) Adopted version of Ralph R. Bentley & Averno M. Remples, has been used to measure teacher morale individually as well as faculty wise.
Every school has its unique 'personality'. It is this 'personality' which is described as organisational climate of the school. What personality is to an individual, organisational climate is to the organisation of the school.

Organisational climate affects the teaching, learning and professional growth. In a good climate teachers and students both can work better. The assumption is that better organisational climate will lead to better school performance.

It can be defined in simple words as the interaction which takes place between the teachers as a group and the Principal as the group leader and within the teachers themselves. In order to bring qualitative improvement in the education it is essential to improve the climate of the school.

To study the organisational climate of the school, the organisational climate Description Questionnaire (OCDQ) originally prepared by the Halpin and Don V. Croft was employed.
PHYSICAL FACILITIES:

It has been taken to mean the provision of building, material, equipment, class rooms, furniture, library, grounds, laboratory etc. The existence of proper facilities and their proper utilization provides a stimulating environment which directly or indirectly affects the performance of an institution.

It is maintained that inadequacy of physical facilities in Elementary Teachers Training Institutions is a distinct handicap in improving the quality of teacher education.

Proper physical facilities can contribute to the better performance of the institution. It is assumed that better physical facilities create an environment to work. To get an information about physical facilities a self prepared questionnaire was used.

TEACHING METHODS:

It means all the different methods, materials and equipment employed to further the process of teaching and learning in a school.

The problem of improved methods of educating teachers has been receiving the active consideration
or educationists all over the world. It is assumed that teaching methods tend to improve the quality of education as well as performance of an institution.

A self prepared questionnaire was used to get information regarding teaching methods employed by teachers to further the process of education.

FINANCE

It is the last input taken in the present study and it is assumed that money spent in these institutions also affect the functioning of Elementary Teachers Training Institutions. How the money is spent on different items, a self prepared questionnaire was used in order to know about that. Government is spending a lot in the field of education. When so much is being spent on these institutions it is expected that these training institutions will produce quality outputs.

STATEMENT OF THE PROBLEM

Teacher education system in Punjab operates through a number of training institutions at all levels. These institutions produce various categories of teachers for all levels. The functioning of these institutions
is an index of the efficiency of the teacher education system.

Like all other productive enterprises, teacher education institution is an organised combination of people, materials, facilities, equipment and procedure which interact to achieve goals. The teacher education institutions are planned and inter-dependent arrangement of its component elements to achieve a goal. The task of the system designer is to organise the people, materials and procedures in such a way that the goal set is achieved most efficiently.

Teacher education institutions have inputs, outputs and functions which do not behave isolation, but they are inextricably linked up together. The inputs and their functions are formally structured for achieving the outputs. In order that teacher education institutions should function effectively, the relationship between inputs & outputs should be maximised.

To be precise, the study is an attempt to assess, by applying system analysis approach the functioning of Elementary Teachers Training Institutions.

NEED OF THE STUDY:

The need of the present study lies in the widespread dissatisfaction with efficiency of the Elementary Teachers Training Institutions in Punjab. Till now the emphasis was on the quantitative aspect of these institutions. Those who are best equipped to make teachers training institutions effective have been busy to follow the policy of expansion. Thus planners and administrators in the field of teacher education who have been pre-occupied in the past with the process of expansion should now pay their attention to the improvement of the efficiency of teacher training institutions.

So now instead of expanding teacher training institutions, we must shift our emphasis towards the improving of the efficiency of these institutions. For this purpose, we need to adopt an approach which may help us to analyse the functioning of teacher training institutions.

The functioning of teachers training institutions may be determined by the simple criteria of input and output relationship. The institution is functioning efficiently, if there is a favourable balance between the inputs and outputs.
In other words efficiency of a teacher training institution can be improved by maximising the relationship of input with the efficiency of the institutions.

It is a known fact that there is a hard competition among the different sectors for more and more resources in the form of inputs. In our country educationists find it difficult to convince the planner for providing inputs for education in general and teacher education in particular. Till we prepare a case for more inputs it is desirable that the maximum benefit may be derived from the existing inputs by putting them to the best possible use. So there is need to know the qualitative and quantitative contribution of each input provided to the teacher training institutions. This knowledge would help to develop a better perspective of the efficiency of the teacher training institutions. The present study is an attempt in the direction.

No more than a grown up man can suitably wear the clothes that fitted him as a child, can teacher training institutions in Punjab successfully resist the need to change themselves when everything around is changing. The researcher maintains that on the basis of available studies, that for the last more than 40 years
very little progress has been made in teacher training institutions while much progress has been made in other sectors as industry, medicine, agriculture, communication. There is a huge gap between what they are doing and what they ought to be doing.

In a hard pressed economy no state can afford to misuse its resources. The State cannot afford to perpetuate a system of Teacher Education which is not functioning effectively. What is required a system of education which may function at the highest level of efficiency. One must closely scrutinise the teacher education system and assess its functioning so that corresponding changes in its planning and administration may be initiated thereby improving the functioning by maximising the input - output relationship.

**AIMS AND OBJECTIVES:**

The present investigation, by applying System approach, aims at studying the functioning of Elementary Teachers Training Institutions in Punjab. It would try to analyse how Elementary Training Institutions are operating in the State of Punjab in terms of producing quality outputs.
In the light of above major objectives of the investigation the following objectives are also visualised:

1. To study the nature and extent of Teacher Educators input in Elementary Teachers Training Institutions in Punjab.

2. To study the nature and extent of student teachers input in Elementary Teachers Training Institutions in Punjab.

3. To study the nature and extent of Finance input in Elementary Teachers Training Institutions, in Punjab.

4. To study the nature and extent of teaching methods input in Elementary Teachers Training Institutions in Punjab.

5. To study the nature and extent of physical facilities input in Elementary Teachers Training Institutions in Punjab.

6. To study the nature and extent of Academic Motivation input in Elementary Teachers Training Institutions in Punjab.

7. To study the nature and extent of organisational climate input in Elementary Teachers Training Institutions, in Punjab.
8. To study the nature and extent of leadership style input in Elementary Teachers Training Institutions in Punjab.

9. To study the nature and extent of Teachers Morale input in Elementary Teachers Training Institutions, in Punjab.

10. To study the nature and extent of output in Elementary Teachers Training Institutions, in Punjab.

11. To study the relationship of Teacher Educator input with output of Elementary Teachers Training Institutions in Punjab.

12. To study the relationship of Student Teacher input with output of Elementary Teachers Training Institutions in Punjab.

13. To study the relationship of Finance input with output of Elementary Teachers Training Institutions, in Punjab.

14. To study the relationship of teaching methods input with output of Elementary Teachers Training Institutions in Punjab.
15. To study the relationship of physical facilities input with output of Elementary Teachers Training Institutions in Punjab.


17. To study the relationship of Organizational climate input with output of Elementary Teachers Training Institutions in Punjab.

18. To study the relationship of leadership style input with output of Elementary Teachers Training Institutions in Punjab.

19. To study the relationship of Teachers moral input with output of Elementary Teachers Training Institutions in Punjab.

20. To study the cumulative effect of the significant \( \text{(input)} \) variables in predicting the student teachers performance \( \text{(output)} \).

1:12 HYPOTHESIS 1:

1. There exists relationship between input of Teacher Educators and output of Elementary Teachers Training Institutions in Punjab.
2. There exists relationship between input of student teachers and output of Elementary Teachers Training Institutions in Punjab.

3. There exists relationship between input of Finance and output of Elementary Teachers Training Institution in Punjab.

4. There exists relationship between input of teaching Methods and output of Elementary Teachers Training Institutions, in Punjab.

5. There exists relationship between input of Physical facilities and output of Elementary Teachers Training Institutions, in Punjab.


8. There exists relationship between input of Leadership style with output of Elementary Teachers Training Institutions in Punjab.

10. The cumulative effect of nine inputs tend to affect the output.

11. LIMITATIONS:

1. The functioning of Elementary Teachers Training Institutions in Punjab may be judged either from the inside in terms of familiar academic standards, norms and criteria or from the outside in terms of border social and economic criteria. The present study is confined to judge the functioning of Elementary Teachers Training Institutions on the basis of former criteria.

2. Output is the function of a number of inputs. The present study is confined to investigate only nine selected inputs.

3. It depends upon questionnaire technique as the tool for data collection.

4. The performance of a student is affected by out-of-institution as well as institutional influence as the out-of-institution influences are beyond the scope of this study.
5. A system exchanges input and output with environment. Elementary Teachers Training Institutions export output to the environment and in turn receive inputs. National State and University agencies pour plants into the system of teacher education. Only nine selected inputs are studied.

6. A number of teacher training institutions exist in Punjab at different levels. The present study is confined to Elementary Teachers Training Institutions of Punjab only.

7. There are 17 Elementary Teachers Training Institutions in State of Punjab. The study is delimited to 15 institutions.

8. Out of the many criterion used to measure the efficiency of Elementary Teachers Training Institutions, only one criterion that is of results of student teachers of final examination conducted by Punjab Education Department has been used to measure the efficiency of Elementary Teachers Training Institutions.

### ABBREVIATIONS USED

- E.T.T.I. - Elementary Teachers Training Institutions
- J.B.T. - Junior Basic Training
- O.C.D.Q - Organisational Climate description Questionnaire
- P.T.O. - Purdue Teacher opinionnaire
- L.B.D.Q - Leadership Behaviour Description Questionnaire
- J.I.M.S. - Junior Index motivation scale
- S.E.S - Socio- Economic Status
- T.S. - Teacher Score
CONCLUSION

Research cannot be without theory. The theory presents the basis of a research and expounds, clarifies, and elaborates many of the ideas that constitute a flow of blood in the veins of research. In the present chapter, and attempt was made to present a theoretical frame of reference in regard to systems approach in the field of teacher education. Next chapter which would present a review of the related research will clarify the concept more.

...