CHAPTER - I

A PERSPECTIVE IN SECONDARY EDUCATION IN INDIA AND SYSTEMS ANALYSIS APPROACH
CHAPTER - I
BACKGROUND AND THEORETICAL FRAMEWORK

1.1 Introduction:

Education is the key to make the nation modern, self-reliant and advanced and, therefore, it is a must for every citizen. Since it is now accepted that education is a pre-requisite for progress and development, it is being accorded a high priority as an integral part of the country's developmental process. This thesis finds support from UNESCO when it says, "Education is now recognised as a fundamental right as well as indispensable factor in social and economic development".

Education is the mirror in which the entire developmental process finds its reflection. The greatest stress in the democratic countries is laid on education. The fate of any country depends upon good citizens and it is education which produces them.

During the Seventh Five Year Plan, the main thrust of educational activities has been on the promotion of quality and excellence, gearing the whole education system to meet the challenges of emerging needs and areas. Education has been viewed as an input in the development
In the National Policy on Education (1986), the priority has been given to the qualitative aspect of education and, at the same time, education has been conceptualised as a sub-system of the social system which has dynamic and beneficial links with other sub-systems.

Unfortunately, the response of educational systems mainly to these challenging new demands and circumstances has been to expand themselves as rapidly as possible, by and large in accordance with their old image. Education in India has become a major enterprise reaching into almost every home. There is no denying the fact that we have made considerable progress since independence in terms of increase in the number of all types of educational institutions and students' enrolment. At present there are 6.9 lakhs of educational institutions of all types in India. According to the Survey, 1989, the number of primary and middle schools is 6.75 lakhs and of secondary/higher secondary schools is 64240. There are 6112 colleges and nearly 175 universities. The student enrolment in universities and colleges increased from 35.39 lakhs in 1984-85 to 36.82 lakhs in the beginning of the year 1987-88. The enrolment of women students during the corresponding period increased from 10.21 lakhs to 11.25 lakhs. The number of students is 11.4 crores and that of teachers is 32 lakhs. Educational expenditure of all
types and at all levels has reached a figure of nearly
1014.38 crores during 1986-87.

So far as Secondary Education is concerned there
were 64240 secondary schools in 1986-87 (against about 4000
in 1947) with an enrolment of about 155 lakhs in 1986-87
(against about 7 lakhs in 1947). During the 1950-87 period
the total number of teachers increased from 93000 to 11.99
lakhs. In 1950-51 the expenditure on the Secondary Education
sector was 29.7 per cent of the total expenditure of education.
By 1986-87 it was nearly doubled.

But during the past many decades concern has shifted
from the quantitative aspects of education to matters of
quality. So far, emphasis has been laid on accommodating
more and more students. The schools could get with teaching
remaining the same, using the same methods year after year.
Now the period of rapid growth is coming to an end, the
quality of education is being examined. Schools are being
prodded to tailor programmes to meet the divergent backgrounds,
interests and abilities of all students.

Educational planners have tried to pursue programmes
oriented to securing both quality and quantity in spite of
the scarcity of resources. The simultaneous pursuit
of these goals is not easy, partly because no country,
however rich, can provide all the resources these programmes
will need and partly because the pursuit of these goals needs many inputs.

The pressure for the expansion of secondary education will most certainly continue and may indeed increase as the country progresses towards universal elementary education. Today only 22 per cent of the students in the age-group corresponding to classes IX and X are in school and this ratio is nowhere near that of developed countries.

A country achieves her educational objectives through well administered secondary education. Secondary education in fact, is that stage of education which helps children to become full members of a complex modern society. It develops to the highest potential, his ability, his attitude, his interests and thus, helps him to enter life as a knowledgeable, active-minded social individual.

Secondary education is saddled with the unenviable task of receiving pupils from a less-than-satisfactory system of elementary education and preparing pupils for the next stage of life. This cannot be done with poor quality of inputs such as the high teacher-pupil ratio, outmoded methods of teaching, poor laboratory and library facilities, an un-inspiring curriculum and a management system which discourages innovation.

Since independence the nation has invested a large slice of its resources in secondary education. It, therefore,
has a right to expect that the secondary schools function efficiently. There is widespread concern and a general consensus about the deterioration and irrelevance of secondary education. It cannot be improved by marginal changes. The system has to be re-structured by bringing about fundamental changes in priorities, contents, methodologies of teaching and learning systems of evaluation and management structures.

The quality of secondary education has suffered because of several reasons. At present the total resources available are limited and, as the claims of expansion have greater priority, qualitative programmes are relegated to a second place and given very inadequate resources. A qualitative improvement needs a deliberate attempt to concentrate resources in terms of men, money and materials on programmes of great priority. Programmes of qualitative improvement need money which has been in short supply. But even more importantly, they need careful planning and intensive human effort especially on the part of students and teachers. These inputs have been even more scarce.

As the Indian Education Commission (1964-66) pointed out, the programmes of quality improvement need to be accorded much higher priority than has been accorded to them in the past. Educational standards have to be adequate, kept continually rising and should be internationally comparable. Apart from additional resources, this implies
a very big challenge to educational planners, administrators, teachers and students.

The major challenge before educational planners is to devise an educational system that would, on the one hand, meet the growing demands for secondary education and on the other ensure that the objective of qualitative viability does not get diluted.

In this context, considerably larger resources will have to be allocated to facilitate the system to move away from the present state of drift and ad hocism. Neither qualitative nor quantitative improvement can be effected without provision of resources. But educational systems all over the world are facing a resource crisis. When resources are limited, alternative strategies have to be envisaged. Norms have to be laid and specifications have to be worked out.

If somehow the unit costs of education are reduced without impairing the quality, the system can learn to live with the situation. Unfortunately the prospects for such a situation are quite the opposite. The only real escape from this situation for secondary education is to find ways to get more and better education from the existing resources.
1.2 Need for New Strategy: The Systems Analysis Approach:

The new strategy demands far-reaching innovations and drastic changes in the customary ways of doing things. The new strategy must pay close attention not simply to quantity but also to quality. There is no standardised strategy for improving the quality of education. There is, however, one approach which the strategies adopted with regard to secondary education must emphasize in the years to come. It should penetrate deeply into the outer surface and aggregate dimensions of the system, so that the functioning of the system may be improved.

Thus, the planners in the field of secondary education who have been preoccupied in the past with the process of expansion should now pay attention to the improvement of the functioning of the secondary education system. It implies that they should get at its inner life and should not merely confine themselves 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 processes by inventing a new learning system and sub-system, testing them out, modifying them as needed and then promoting their wider application.

In this respect one can learn some important lessons from design engineering as applied to other fields. The
process begins with a clear definition of "functional specifications" - that is, the tasks to be performed within prescribed economic and other limitations. The object, then, is to examine various alternative "Systems" for achieving the desired results, to select the optimum one and develop it to fruition. When the prescribed task, for example, was to put men into orbit in the outer space, the design engineers did not begin with the aeroplane and ask how it might be used to do the job. They began by determining the critical characteristics that a "NEW SYSTEM" would require in order to perform the desired feat. They then drew upon knowledge and experience from a wide range of specialized fields to create a new combination of things — a "new system" — calculated to achieve the specified purpose.

One of the necessary steps towards identifying a new strategy is to develop better instruments for assessing the functioning 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 medical expert does while carrying out his patient's annual "check-up". The medical expert 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 as 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 sort of indicators the system of secondary education would need to have an annual "check-up".

The medical doctor's strategy in analysing the human body should be adopted by modern educational administrators in the analysis of organizations and systems. This is called the "Systems Analysis" approach, which 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 systems analysis applied to the secondary education system. 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 are now badly disturbed and must be restored to a better balance and to a mutually compatible rate of movement. In the present research, an attempt has been made to bring these relationships into the limelight and to view the system as a whole by applying the systems approach. At this stage, it will be pertinent to discuss the systems analysis. The succeeding pages are devoted to explain it as clearly as possible.
1.3 The Systems Analysis Procedures - An Overview:

The increase in size and complexity of education with limited resources led the administration through a scientific management era with undue emphasis upon efficiency.

Calleham (1962) in his book "Education and the Cult of Efficiency" states: "The essence of the tragedy was in adopting values and practices indiscriminately and applying them with little or no consideration of educational values or purposes." It was not that some of the ideas, from the business world might not have been used to advantage in educational administration, but that the wholesale adoption of the basic values as well as the techniques of the business/industrial world, was a serious mistake in an institution whose primary purpose was the education of the children. Perhaps the tragedy was not inherent in the borrowing from business and industry, but only in application. It is possible that if educators had sought "The finest product at the lowest cost" - a dictum which is sometimes claimed to be a basic premise in American manufacturing - the results would not have been unfortunate but the record shows that emphasis was not at all upon "Producing the finest product but on the lowest cost".

Educational administration underwent a transformation in the past fifteen or twenty years, moving towards a much more theoretical substantive field of study and practice.
After analysing the evolving nature of school administration, we can see that a number of contrasting dominant doctrines or ideologies, that may be conceived as distinct areas, have influenced this field. The current interest in the systems analysis approach is indicative of the general management orientation of the times. It provides a guiding rationale for what administrators should do and why. The era of administrative science and human relations has not been abandoned, but rather modified in the direction of systems procedures. There seems to be a growing tendency to assume education and its components as systems.

The systems analysis has become quite fashionable as a research technique. Thinkers in many disciplines are increasingly choosing to view intricate topics of human concern as systems. They are searching for forms of order and patterns of regularity that make their objects of study more comprehensible.

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 analysed 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 are biological, physical, social or whatsoever, reveals the same developmental stages. The history of social theory reflects the belief that societies evolve in the same fashion as the organism. The systems analysis provides a framework for a basic conceptual organisation and reclassification of the differentiated parts of any system.

General Systems Theory:

The General Systems Theory provides an organised means for studying the phenomena found in many kinds of systems. As a doctrine of wholeness, it makes use of the concept of a system in search of common properties among the diverse kinds of complex systems.

Credit for the term General Systems Theory is given to Von Bertalanffy. He has pointed out that apparent goal-seeking was not an exclusive characteristic of living systems. He called for giving attention to an essential difference between an ISOLATED system of chemical reactions and an OPEN one, in which sources and sinks were present. In an isolated system, after the equilibrium has been attained, the relative concentration of substances depends, of course, on the initial concentration of the reactions (because of
the conservation of mass). Thus, the final state of the system depends upon the initial conditions. In an open system, however, a steady state may be attained in which the final concentrations are virtually independent of the initial conditions. Moreover, if the steady state is distributed, as by adding or removing quantities of reacting substances, it will re-establish itself, being determined by the characteristics of the entire system rather than by any specific state of the system. Thus, an open system will appear to exhibit "equifinality" to a naive observer. It will appear to have a will of its own or a purpose to maintain the steady state—which incidently is just what living systems are to a large extent, engaged in doing by means of their well-known homeostatis (steady-state restoring) mechanisms.

What is a System?

The classification of systems by the nature of their relations to the environment and the search for laws governing the behaviour of each class can be said to be the problems posed by the General Systems Theory. Once one has raised the general questions about possible laws governing the behaviour of the systems, the problem of a rigorous definition of a "system" comes to the fore. In common usage, the word refers to widely separated concepts.
Engineers are concerned with the systems as functionally related aggregates of technological devices. Physiologists single out functionally related portions of living organisms (circulatory, digestive, nervous systems), social scientists speak of economic and political systems, philosophers about the systems of thought.

We 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 the relations among the entities to the behaviour or the history of the system.

According to the third definition, "social system" qualifies as a system. "Social system" is a term so widely used that its meaning is assumed to be obvious. However, in the context of a systems theory, "social system" would have to be defined de novo every time some class of entities (individuals, families, institutions) and relations among them (communication channels, influence, obligations) are singled out for attention.

Social System and its Environment:

Social system is a concept that refers both to a complex of interdependence between parts, components and
processes that involve discernible regularities of relationships and to a similar type of inter-dependence between such a complex and its surrounding environment. The system in this sense is, therefore, a concept around which a sophisticated theory is and must be organised. This is because any regularity of relationship can be more adequately understood if the whole complex of multiple interdependencies of which it forms part is taken into account.

A social system is inherently an open system engaged in the processes of inter-change (of input-output relations) with its environment, as well as consisting of inter-changes among its internal units. 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. The dependence of the organism on its physical environment for nutrition and respiration is prototypical.

For any system of reference, the problems of functioning of the systems are those concerning the conditions of the maintenance or development of the inter-changes with receiving systems, both inputs from them and outputs to them. Functional significance may be determined by the simple criterion of the dysfunctional consequences of failure, deficit or excess of an input to a receiving
system, as asphyxiation is the consequence of failure in the oxygen input and so oxygen input is judged to be functionally significant for the organism. Therefore, it is the inputs that have primary functional significance for any given system of reference.

It is necessary to consider the various kinds of environment of a living system, because each such environment is engaged in one of the interchangeable relations with the system and the specialised natures of these relations serve as the primary basis of the internal differentiation of the system. For instance, the nutrition and elimination systems, the respiratory system and the locomotor system of an organism are differentiated from each other on this basis.

The social system is, thus, a very complex entity. As an organisation of human interest, activities and commitments, it must be viewed as a system and in functional perspective.

By implication, a school system has been viewed as a set of entities possessing specified properties and relationships. The objective is to apply the Systems Analysis Approach to understand the social institutions in general and education in particular.

**Meaning of Systems Analysis:**

The term systems analysis 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 has contributed much to various areas of human concern and promises even greater achievements in matters concerning education. The concept of systems analysis may be defined as an orderly way of identifying and ordering the differentiated 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, scholastic or deterministic, contain a super system and sub-systems, be adaptive or not, achieve homeostasis, existing in time and space, be empirical or symbolic and possesses numerous other rigorously defined attributes. Thus, in a system two or more parts and their relations form a single, identifiable entity. The systems analysis provides glimpses of its parts and operations.

The task of the systems analysis is to use the existing resources or generate additional ones to create new means, ends and patterns, and resolve conflicts. It is not an easy mission to prepare a map of the means-ends hierarchy in a system. The system expert first decides
what questions are relevant to his inquiry, attempts to operationalize vaguely stated objectives, eliminates certain imprecise factors, ascertains quantifiable variables, specifies his assumptions and selects the appropriate models and analytical tools for the specific problem. It provides data on competing strategies with estimates of costs, risks, gains and time required for each course of action. The systems analysis helps to organize human thinking within the framework of reason. Through such an analysis a system is examined not in piecemeal, where every facet stands alone, but as a "system"—a system with interacting parts that produce their own "indicators" as to whether the interaction is going well or badly.

1.4 Conceptual View of Education as a "System":

We can put very simply in a capsule form what has just been said so far. The primary connotation of "system" is inter-relatedness. A system is a set of parts that are related to each other. Man-made systems are devised to achieve a given purpose or set of purposes. The systems designed to achieve purposes are by necessity very complex. Moreover there is the effect of environment on the system. The system and environment are constantly interacting. Hence, such systems may best 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 system with inputs and receive its outputs. When these inputs and outputs can be identified and measured, they provide useful information about the functioning of the system.

Secondary education may be viewed as one of productive enterprises. The process of production is analysed by identifying the inputs like students, teachers, money, physical facilities and many other things which are being used by the system. Like the process of production in other enterprises, the process of secondary education is also supposed to produce a 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 secondary education into inputs (things that go into the process), the process itself 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, cultivated and fertilization and cultivation take place and the harvest is reaped. In industry iron ore and coal and various other things go into a furnace, and steel emerges. It would be perfectly possible to talk about the health
services as a system into which the labour of doctors and nurses and the para-medical staff together with the buildings that they use, all the drugs, equipment and food are considered as inputs, patients are looked after in accordance with a process and the recovery of patients' health is the output.

This, however, is not the way we customarily view the system of secondary education. We call it a system, but we do not treat it as one. But it is perfectly proper and acceptable to talk by analogy about the inputs, the process and the outputs of secondary education. The inputs of secondary education are its resources - human and non-human. The process of secondary education is what goes on while the inputs are being used. The outputs are something that are extra-ordinarily difficult to be precise about. In one sense, it is the skills/knowledge that everybody has learnt in that year. In another sense, it may be everybody who has passed an examination in that year. In still another sense, it may be the adoption of new ideas and innovations by the schools.

Now there are three concepts that are central to the secondary education system: inputs, outputs and the functioning or operations or processes. The prime inputs of the secondary education systems are human and non-human factors. The process transforms these inputs into outputs.
It can be said that the inputs may come from within and without the system. Like other social systems, secondary education is neither self-sufficient nor self-contained. It draws inputs from its environment and, thus, depends upon it for its survival. It also exports outputs that are useful to the environment.

Just like a human system that needs to regulate its body temperature to remain in good health, the secondary education system needs to sustain a dynamic equilibrium in order to function properly and effectively. The secondary education system is said to be in dynamic equilibrium when the relationship between the inputs and outputs are in favourable balance. When it is not, disequilibrium results and its functioning is affected accordingly.

It may be conceptualized that secondary education is a complex social system which is a continuous process of resources inter-change with its environment and also within the system. The central concept is the relationship between the inputs and outputs. Secondary education has a set of inputs which are subjected to a process, designed to attain certain outputs. 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.
Secondary education, therefore, consists of mutually interacting components which together form some desired function. Its discrete elements and functions do not behave in isolation because of their inter-relatedness. Every action in one part reverberates throughout the system because all its elements, human or non-human, are inextricably linked. Hence, conceptualizing secondary education as a "system" provides a useful insight into its functioning.

1.5 Subjecting Secondary Education to Systems Analysis:

The functioning of the secondary education system may be determined by the simple criteria of the dysfunctional consequences of failure, deficit or excess of an input into the system. Since asphyxiation is the consequence of the lack of the oxygen input, it is judged to be functionally significant for the organism. Similarly, the inputs—human and non-human—have functional significance for the secondary education system. The basic idea involved is that the system is functioning well, if there is a favourable balance of outputs and inputs.

The systems analysis, as it is adapted here, "functions as a panoramic lens trained on an organization so that it can be perceived as gestalt, uncovering not only its components between the organization and the environment but giving an impression of its total functioning or health."
A systems analysis, as used here, resembles in some respects to what a doctor does when he examines the most complicated "system" of a human being. It is never possible nor is it necessary for the doctor to have complete knowledge or every detail of a human being's system and its functional processes. The strategy is to concentrate on selected indicators and relationships within the system and between the system and its environment. From the indicators and their relationships he makes an appraisal of the way the total system is functioning and prescribes what may be needed to make it function better.

The physician's strategy in analysing a human system has been adapted in this investigation by applying the systems analysis approach. Since the quality of secondary education is determined by the function of the quality and quantity of inputs, an effort is made to study both soft and hard inputs. Further, in order to make an appraisal of the functioning of the system, input-output relationships have been examined. Thus the systems analysis functions in this study as a wide-angled lens trained on a system so that it can be seen in its entirety, including the relationships among its components.

1.6 Subjecting Secondary Education in the Union Territory of Chandigarh to Systems Framework:

The Indian Education Commission (1964-66), the report of which has become a national policy document, feels that
education is the most powerful instrument of national
development. Educational and national reconstruction are
intimately interlinked. "We must either build a sound,
balanced, effective and imaginative educational system to
meet our developing needs and respond to challenging
aspirations or be content to be swept aside by the strong
currents of history" (Biswas, 1971). This has brought
educational system and its various sub-systems into focus.
The educational system can be perceived as a social system
operating in a complex of interacting levels of systems.
This means that it is a part of a bigger system and comprises
smaller systems.

These bigger and smaller systems may be considered
as components of a system called National System of
Education to which levels can be assigned. Miller (1965)
suggests the terms subsystems, systems and supra-systems
to delineate interacting levels in a system. The interacting
levels of the National System of Education, of which the
secondary education system in the Union Territory of
Chandigarh is a part, will now be examined.

The Secondary Education System as an open system
is dependent upon other social systems, their characterization
as sub-systems, systems, supra subsystems, supra systems and
is relative to their degree of autonomy in carrying out their
functions. From the point of view of organizational
theory, a sub-system of one or more larger systems and its
links or integration with these systems affect its mode
of operation and level of activity.
The Supra System: The National Educational System:

The national educational system is viewed in the complex of interacting systems as a supra system, whose outputs are inputs into an even larger system, i.e., society. It exports outputs to its environment, society and the environment in turn provides the system with inputs. It is, thus, an open system. The success with which the national educational system executes its task depends to a great extent upon the functioning of its different interacting levels of the system.

In the light of systems theory, inputs of a system will reverberate in all its parts. This means that a dysfunction in one system will have ramifications in the entire system. Thus, in order that a supra system feeds greater and better quality inputs into society, it, therefore, is imperative for the different interacting levels of the system to function well.

The Supra Sub-system:

Out of the many components of the National Education System, the focus here is only on secondary education. At the national level secondary education is viewed in the complex of interacting systems as supra sub-systems whose outputs are inputs of the national education system and it feeds back some of its outputs into supra subsystem. Both
are closely inter-related. The Secondary Education System is integrally related to and emanated from the education system. This means that the national education system provides the secondary education system with inputs. And, in return, secondary education exports outputs which become inputs of the education system. It can be seen that both the supra system i.e., the national education system and supra sub-system are mutually interdependent.

The System : Educational System in the Union Territory of Chandigarh:

The Constitution of India is federal in its nature. The essential basis of a federation is that power is divided between the Centre and the States but at the same time both have common objectives and goals.

In our Constitution education is largely a subject assigned to the States. Education is in the curious position of being technically a responsibility of the States but the centre has a strong stake in it. It means that the Government has ultimate constitutional authority over education within the territory of its jurisdiction.

There has been a phenomenal progress in the field of education in the Union Territory of Chandigarh. There have been a manifold increase in the number of educational institutions and in their enrolment. According to one report, 93% children of the age group of 6-11 years are
attending the schools. A statistical survey reveals that educational expenditure is on the increase every year and this trend is likely to continue.

Like other States and Union Territories, the Union Territory of Chandigarh cannot bear the increasing educational expenditure with its existing resources. So the problem for the government is to operate the educational system on a shoe-string budget.

The State Education System is conceptualized in the complex of interacting systems. Just like all other systems at the interacting levels, the State Education System is an open one in the matter of exchange of inputs and outputs with its environment i.e., the secondary education system at the national level and the society. It exports outputs to its environment as well as derives its inputs from there, which, in this case, is supra sub-system, supra system and society. Inputs can affect the quantity and quality of the outputs and in this way the functioning of the system. It can be, thus, seen that the system, supra sub-system and supra system are mutually interdependent.

1.7 Locale of the Study: Secondary Education in the Union Territory of Chandigarh—A Sub-system:

Secondary Education in the Union Territory of Chandigarh has witnessed a period of expansion during the last three
decades. At present there are nearly 50 secondary schools in the Union Territory of Chandigarh from where many thousands pass out every year. The large quantity of students exported to the environment has great potentialities to affect the functioning of the larger systems. The secondary education system is fed back by the larger systems by providing inputs in terms of money, equipment, buildings, libraries, manpower and other resources. They also provide inputs in terms of the reports about the quality of the outputs. So it derives inputs from its environment and exports outputs to its environment.

Just like all other systems at the interacting levels of systems, secondary education in the Union Territory of Chandigarh is an open system since it exchanges inputs and outputs with its environment which in this case is the larger systems: They are the Educational Systems at State level, the Secondary Education System at the national level, the National Educational System and the Society.

Again, just like all other interacting levels of systems in the supra system (the National Educational System) the secondary education at the Union Territory level is a social system which has inputs, outputs and functions which do not behave in isolation because they are inextricably linked with one another. These inputs and their functions are formally structured for achieving some goals (output). The nature of these relationships
should maximize goal achievement. It also derives inputs from within the system in terms of satisfaction among teachers and students. In this, like other open systems, there must be a balance between inputs and outputs.

Thus, secondary education in the Union Territory of Chandigarh has been conceptualized as one system in the complex of interacting levels of systems that comprises the National Educational System. It is linked with all the other systems in this nexus of interacting systems through inputs, outputs and feedback processes. Any dysfunction in it will reverberate in the entire system. Thus, the secondary education system must minimize its dysfunctioning. It can do so by sustaining itself in a dynamic equilibrium through maximizing goal achievement (output) or, simply put, it must maintain proper functioning.

The Paradigm:

Earlier it has been hypothesized that the quality of secondary education is the function of the quantity and quality of inputs. As a theoretical base, the paradigm conceptualizes the secondary education system as an input-output system in a dynamic equilibrium. When inputs and outputs can be identified and measured, they provide useful information about the functioning of the system. The information would be used as a guide to the improvement of resource allocation within the secondary education system;
resources would be shifted within secondary education from
the inputs that contribute least to the output, to the
inputs that contribute most.

The secondary education system, as discussed earlier,
has a set of inputs which are subjected to a process
designed to attain certain outputs, which are intended to
meet the system's objectives. They form a dynamic organic
whole. In order to assess the functioning of the system,
input-output relationships must be examined in a unified
vision.

Figure 1.1 forms a conceptual paradigm for a systems
analysis of the secondary education system. The figure
does not show the whole of what must be looked at in the
light of a systems analysis. It should indicate (i) the
component parts of the system and their relationship and
(ii) the system's relationship with environment. It is
only confined to the internal components of the system
detached from environment. The inputs and outputs in relation
to environment have not been examined as it is beyond the
scope of this study and, therefore, it is excluded from
the figure.

1.8 **Inputs of Secondary Education System:**

An input is the entities which are sent from
the environment into the system. The inputs, in other words,
FIG. NO 1.1.

INPUT - OUTPUT PARADIGM

STUDENT

TEACHER

ORGANISATIONAL CLIMATE

LEADERSHIP STYLE

TEACHER MORALE

ACADEMIC MOTIVATION

ACHIEVEMENT MOTIVATION

STUDY HABITS

PHYSICAL FACILITIES

ACADEMIC ACHIEVEMENTS

OUTPUT

SECONDARY EDUCATION

OUTPUT

INNOVATIVENESS OF SCHOOLS
mean things that go into a process. These inputs may be conceived in the form of both human and non-human material.

The inputs included in the study are as under:

**Students:**

Students are the prime inputs that go into the system of secondary education. Their learning and education is the prime object of the system and, at the end, they are its prime output. As the proper functioning of an educational system largely depends upon the quality of its students, so it is essential that the right quality of students is available to the secondary schools. Many observers have noticed that the quality of the students in the secondary schools vary so far as their traits and characteristics are concerned. This variability in the quality of students is due to the fact that with the introduction of compulsory and free education, students from all sections of society are joining secondary schools. The quality of a student is determined by a number of factors. Research studies have brought into focus factors like age, socio-economic status, sex, intelligence, previous academic background of the family, the nature and size of the family, the interests and participation in co-curricular activities, etc. In this paradigm the combination of traits and characteristics of students have been assigned weightage to prepare a student input index.
Teachers:

Teachers are the most crucial input that go into the system of secondary education. They are also the most expensive input. Their salaries typically comprise between 65 to 70% of the direct costs which are included in the school budget. Furthermore this is the cost item which is increasing rapidly. It is now felt that schools should get the finest pickings of the manpower supply.

Those who are concerned with the functioning of secondary schools feel particularly critical of the failure of teachers to maintain the 'quality' in education. In order to have a qualitative output, there must be an increase in the inputs of secondary schools and that should be first-rate teachers.

Unhappily, there exists no uniform criteria for the recruitment of teachers for secondary schools. Very little research has been done in this area. No systematic data have been gathered and organised to base decisions.

The quality of the teacher input does not depend merely upon the academic and professional equipment but also, to a great extent, on the conditions under which he or she works. They relate to the load of work, the environment, the working conditions, the time available for research, good lines of communication, participation in policy making,
opportunity for professional growth, academic freedom, professional duties commensurate with rank and experience, promotion based on merit, etc.

Studies relating to the social background, previous educational experience, age, sex, the type of person motivated to teach have shown that these factors have important bearing on the quality of teachers entering the field of education.

While the salary, of course, is an important consideration, the other factors such as the prestige of the institution, the calibre of the associates and the attitude towards the profession are found to be associated with the quality of teacher educators.

For want of a complete scientific criteria, the approach adopted by the investigator is to combine all the traits and characteristics and then assigning weightage to each of them. The teacher-input index was finalised in this manner.

3. Leadership Style:

In ordinary parlance, "leadership" is used in an evaluative sense. "Leadership style" would then mean "good" or effective pattern of leader behaviour. In the paradigm, however, the leadership style is used not in an evaluative
but in a descriptive sense. It is used to refer to a style or pattern of leadership behaviour, i.e., what the leader does, not what he does is good or not. The leadership behaviour which the paradigm considers is that of the formal leader or designated head of an institution.

The leader is charged with the responsibility for the institution's achievement. Therefore, he must lead, i.e., initiate action and get things done. Since he must accomplish this through the members of the institution "without injuring the intactness of the group" (Halpin, 1966), he must also maintain good human relations if he is to succeed in pursuing group purposes. In nutshell, if a leader is to be successful, he must work towards integrating task achievement and needs satisfaction in order to maintain a dynamic equilibrium in the system and thereby keep it in proper functioning. It means that he must maximise formal achievement and group-needs' satisfaction. He must bring about cooperative action that is both effective and efficient. According to constructs formulated by Halpin and Winer (1970), he should be strong in initiating structure and should evince high consideration for the members of the work group. Although these two behaviours are relatively independent, they are not "necessarily" incompatible (Halpin, 1966).
The initiating structure means behaviour that facilitates work accomplishment. Its main objective is to get the work done in order to attain the goals of the institution. The initiating structure has been defined as ... the leader's behaviour in delineating the relationship between himself and the members of the working group and in endeavouring to establish well-defined patterns of organization, channels of communication and methods of procedure (Halpin 1966). Consideration, the other dimension of Halpin and Winer's leadership construct refers to the "behaviour indicative of friendship, mutual trust, respect and warmth in the relationship between the leader and the member of his staff" (Halpin, 1966). It may be perceived as behaviour that sets the social tone or psychological situation for work. It has something to do with the social needs of the members of an institution.

Research reviews have indicated that an effective leader is one who is capable of maximising the behaviour in both dimensions. This is not easy to do since theorists hold there is an ineluctable conflict between the two dimensions often. When a leader attempts to keep the task dimension high, he suffers high "satisfaction" costs. Conversely, when he keeps the people-dimension high, the task-dimension often suffers a dent.
In the paradigm, leadership style is described in terms of the two-theme convention: task or job orientation and people or person-orientation. It is measured and described through the adaptation of the leadership Behaviour, Description Questionnaires (LBDQ, 1952) which define leadership style in terms of two sub-scales, initiating structure and consideration.

Results on the LBDQ yield four types of leadership style: (1) Task and people-oriented leadership style; which is characterized by high scores in both the initiating structure and consideration sub-scales. This type of leadership is responsive to the needs of the system and to those of its members. It makes possible developing integration of task achievement and needs' satisfaction, thereby maintaining the system in dynamic equilibrium.

(2) The task-oriented leadership style; which is characterized by a high score on the initiating structure sub-scale, but a low score in the consideration subscale. This type of leadership is responsive to the needs of the system but not to those of its members. While this style of leadership may get the work done, the members do not have a feeling of accomplishment and do not feel happy with their working group.

(3) People-oriented leadership style; which is characterized by a low score in the initiating structure sub-scale but a high score in consideration sub-scale. This type
of leadership is responsive to the needs of the members but not to the needs of the system. While the members have group-need satisfaction, the work is done slowly or never at all because the leader does not provide the structure for getting it accomplished. People-oriented leadership is concerned only with social relationships.

(4) "No-focus" leadership style; which is characterised by low scores in both the initiating structure and the consideration sub-scale of the LBDQ. This type of leadership is neither task-nor-person-oriented. Hence, a "no-focus" leadership style. It does not try to meet the needs of either the system or a person or of society. Thus, they work either slowly or never. The members do not have group-need satisfaction. Consequently, they become disinterested workers showing low performance. With the kind of leadership style, task-needs integration is slow or hardly possible; disequilibrium may result and the functioning of the system may get impaired.

4. Organizational Climate:

A discussion of organizational climate follows easily after a discussion of the dimensions of leadership because it may be conceptualized as the global assessment of the interaction between these dimensions within the Organization. Halpin and Croft (1963) refer to it as "organizational personality". Some authorities refer to
it as the socio-psychological work situation in an organization. In general usage, the term reflects more concern with the need satisfaction than the task achievement dimension, but the meaning which reflects both is preferred for the purpose of paradigm.

The organizational climate is considered the personality of an organization because it distinguishes one organization from another. Organizations with different climates or personalities vary in the way the members relate to each other, in the way they perceive their roles and feel about their formal goals.

The organizational climate influences the behaviour of the members of the group. Therefore, an organization must have a desirable climate for the achievement of its goals.

What desirable climate can be inferred from the central finding that pervades all research on leadership and group behaviour. According to Halpin (1966), "an effective group must provide satisfaction to group members by giving a sense of task accomplishment and by providing members with the social satisfaction that comes from being part of a group".

The administrator's leadership style presumably sets the social tone or climate of an organization and
the climate in turn presumably impinges on the administrator's leadership style. Halpin (1966) confirms this in his observation that "certain organizational climates can coerce man to change his leadership style, simply to save his job at no matter what cost in loss of human dignity".

In the paradigm, organizational climate is measured and described through the adaptation of the Organizational Climate Description Questionnaire (OCDQ) devised by Halpin and Croft (1963), which defines organizational climate in terms of the (1) characteristics of the group and (2) characteristics of the leader. Four factors are considered in describing the characteristics of the group; disengagement and hindrance—which are negative elements—and esprit and intimacy—which are positive. Four factors are considered in describing the leader's behaviour; aloofness and production emphasis—which are negative elements—and thrust and consideration—which are positive.

The eight dimensions of the organizational climate will now be defined as Halpin and Croft conceived them (1966).

Disengagement is a dimension which describes a group which is merely "going through the motions" with regard to the task at hand. It describes a member's
behaviour in a task-oriented situation.

Hindrance refers to a feeling that leader burdens his subordinates with unnecessary duties and requirements. The members view the leader as hindering their work rather than facilitating work.

Esprit is synonymous with morale. The members feel that their social needs are being met and they are at the same time enjoying a sense of achievement in their job.

Intimacy refers to the enjoyment of friendly social relations with each other. It describes social needs - satisfaction which is necessarily associated with task accomplishment.

Aloofness refers to the leader's behaviour which is characterized as formal or impersonal. His values are universalistic rather than personalistic, nomotheistic rather than idiographic. He prefers to be formal rather than informal in dealing with other members of his organization.

Production emphasis refers to the behaviour which is characterized by close supervision of the staff. The leader's communication tends to be restricted to getting the members to do the task and he is not sensitive to feedback.
Thrust refers to behaviour of the leader which is characterized by his over-efforts in trying to get the organization going. It is not characterized by close supervision but by the leader's attempt to motivate the members through the example he sets. Though task-oriented, it is viewed favourably because the leader does not require the cooperation of the members more than he willingly gives of himself.

Consideration refers to leader behaviour characterised by a desire to treat members humanly. It is similar to the consideration dimension of the LBDQ.

The eight dimensions given above map organizational climate into six types ranked on a continuum ranging from open to closed. (1) Open climate, which can be characterized as low in the disengagement, hindrance, aloofness and production emphasis but high in the esprit, thrust and consideration and average in the intimacy sub-scales of OCDQ. (2) Autonomous climate, which can be characterised as low in the disengagement, hindrance and production emphasis subscales, high in the esprit, intimacy and aloofness sub-scales, but average in the thrust and consideration sub-scales. (3) Controlled climate, which is marked by low scores in the disengagement, intimacy and consideration sub-scales, high in the esprit, aloofness, hindrance and production emphasis sub-scales, but average in the thrust sub-scale. (4) Familiar climate,
which is high in disengagement, intimacy and consideration, low in hindrance, aloofness, and production emphasis and average in thrust and esprit. (5) Paternal climate, which is marked by high disengagement, consideration and production emphasis, average in thrust, and low hindrance, esprit, intimacy and aloofness. (6) Closed climate, which is marked by high disengagement, hindrance, aloofness and production emphasis, average intimacy and low in esprit, thrust and consideration.

In the paradigm, the open, autonomous and controlled climates are considered as having open tendencies, while the familiar, paternal and closed as having closed tendencies. This broader classification scheme has been adopted since there seems to be a weakness in the middle classifications of organizational climate (Watkins, 1968). Findings by Watkins indicate that there is a tendency for the middle climate designations to be "developed out of a chaos of perceptions than from a clearly perceived organizational climate (Watkins 1968)." Besides, even Halpin and Croft (1963) had reservations about the middle climates in the continuum. They expressed more confidence about the climates described at each end of the listing (Open and Closed Climates) than about those in between (autonomous, controlled, familiar and paternal climates).

5. Teacher Morale:

The dictionary meaning of morale is "prevailing mood and spirit conducive to willing and dependable performance".
"High Morale" is defined as a confident spirit of wholehearted cooperation in a common effort.

No two conceptions of morale are alike. It can be no more defined than energy or life or soul. All we can do is to feel and find out when and where it is the strongest. It makes an individual fit for any task. It also gives him a sense of solidarity with his comrades seeking the same goal and enables him either to do something or suffer in a common cause.

Morale refers to the conditions of a group where there are clear and fixed group goals (purposes) that are felt to be important and integrated with individual goals. When there is confidence in the attainment in the leaders, associates and finally in oneself; where group actions are integrated and cooperative and where aggression and hostility are expressed against forces frustrating the group rather than towards other individuals within the group. A statement by the American Association of School Administrators (1948) says, "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. It manifests itself in a tendency to subordinate personal consideration to the purposes of the enterprise, to work as a member of a team for the accomplishment of common goals and to derive satisfaction from the achievement
of the organizations. When the disposition towards the achievement of common purposes is weak, morale is said to be low. Low morale is characterized by behaviour that is obstructive or non-contributory to the common purposes by failure to derive personal satisfaction from group achievement and by a tendency to elevate personal interest above the purposes of the enterprise". (American Association of School Administrators, 1948).

Some authors have defined morale in terms of the individual whereas others have done it keeping in view the case of a group and according to some, morale is a relative concept rather than an absolute one. Morale is generated by a group and for an individual, it is a feeling of being accepted by and belonging to a group through adherence to common goals. Such group morale is the composite expression of the attitude of various individuals in the group. The recognition that morale is multi-dimensional rather than uni-dimensional with each situation unique in itself has now been accepted.

The conceptual definition of teacher morale in this study is based on the theory that morale is conceived as an effort related to the successful interaction among individual needs and incentives and organizational goals. 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.
This definition recognizes the satisfaction of both the individual and group needs and their effective harmonization as a basis for morale.

In the present investigation, the Purdue Teacher Opinionnaire (PTO) has been used to study the faculty morale of the secondary schools. The PTO instrument is designed to provide a measure of teacher morale. Not only does the opinionnaire yield a score indicating the general level of a teacher's morale but it also provides meaningful subscores which break down morale into some of its dimensions. The ten dimensions included are:

1) Teacher rapport with Principal  
2) Satisfaction with Teaching  
3) Rapport among teachers  
4) Teacher Salary  
5) Teacher load  
6) Curriculum issues  
7) Teacher status  
8) Community Support of education  
9) School facilities and services  
10) Community pressures

The instrument is valuable because it gives an objective and practical index of teacher morale by means
of perception of the participants. The opinionnaire also provides specific and valid information about crucial problems and areas of tension which may have an adverse effect on morale.

The faculty morale score for each school may be computed by finding the average total scores and average factor scores for each of the ten dimensions. These mean faculty total scores give us an index about what the average morale of the faculty of a particular school is. Then teacher morale is classified into high or low. High teacher morale is indicative of good organizational health—i.e., the system is functioning properly—and low morale indicates that the system is in disequilibrium. It is safe to assert that the state of morale of teachers affects the proper functioning of the system.

6. **Academic Motivation:**

   Conceptually, motivation is a psychological construct. Contrasting 'motivation' against 'ability', 'ability' denotes what an organism can do and is able to do while 'motivation' denotes what an organism wants to do.

   It is maintained that motives of man do form an organised and unified system. But man's motives are based on his wants and needs. Therefore, the concept of motivation does imply some kind of an internal driving force in the
organism itself. This drive can have either a positive or negative direction. Wants, need or desires indicate positive direction and they imply the individual's leaning towards the achievement of some object, position or goal. The negative direction is indicative of fears, or aversions that the individual feels and he tends to move away from the achievement of a certain object, position or goal.

Frymier (1970) clarifies the concept of motivation in another way by stating that "motivation is that which gives direction and intensity to human behaviour in an educational context and motivation to learn in school is that which gives direction and intensity to students' behaviour in a school situation."

Frymier has done a great service to the development of research by devising a theoretical model for academic motivation. Students are usually motivated in many different ways, some of which may be positive and some negative. In the case of students whose motivation to learn is positive, their academic achievement becomes higher than those whose motivation to learn is negative.

Frymier's theoretical model of academic motivation is based on the fundamental assumption that academic motivation has several dimensions. Of these, three dimensions are likely to prove to be factors of academic motivation in the statistical sense. These three basic dimensions of academic motivation are:
1) Internal-External
2) Intake-Output and
3) Approach-Avoidance

The "internal" fact of the basic dimension "Internal-External", in the words of Frymier, "refers to those aspects of personality and value structure which the individual learner brings with him to the learning situation." The external facet refers to the environment as a stimulus source. In other words, the Internal-External dimension of academic motivation appears to reflect its source—the foundation from which academic motivation springs or flows.

The second basic assumption of "Intake-Output" is the consumption-production aspect of academic motivation. It means that some students are motivated merely to receive and use—consume the learning world around them, while others not merely consume but they are also producers in the main. The second dimension of intake-output is indicative of form or style of academic motivation.

The third dimension of "Approach-Avoidance" refers to the fact that some students move towards teachers approval, stimulus ambiguity, novelty, social acceptance and the like, while other students move away from such things. This dimension is the directional dimension of academic motivation.

In Frymier's theoretical model of academic motivation, which is based on three of the fundamental dimensions of
motivation, relationship among the dimensions constitutes a critical ingredient.

The theory of academic motivation developed by Frymier (1970) has the following vital postulates:

1) Motivation is an inferred construct.

2) Motivation to learn in school gives direction and intensity to student behaviour in a school situation.

3) Motivation is not the same thing as ability. Ability is what an organism can do while motivation is what an organism will do or wants to do.

4) Motivation gives direction to behaviour.

5) Helping children to acquire is hardly meaningful unless these children value knowledge first, but valuing knowledge is not possible unless they have learned how to learn, but even learning how to learn is also dependent upon their wanting to learn.

6) Motivation, at least, in part, is learned and it can be taught.

7) Motivation gives intensity to behaviour and the five factors (i) availability and quality of stimuli; (ii) perceptual openness (iii) handling of dissonance, (iv) physiological functioning and (v) anxiety - are important in giving intensity to behaviour by motivation.
As Frymier himself observes: "students who are highly motivated may focus on every harrow segment of higher educational world and miss the relationship in learning that is so important. They are less able to see the patterns and make meaningful interpretations of the complexities of the learning stimuli. Students whose motivation to learn is too low are unable to focus their perceptual energies long enough or clearly enough to engage in the kinds of experiences which are conducive to learning.

Researches and studies on academic motivation have resulted in the identification of some general factors constituting the fibre of academic motivation. According to Frymier (1965, 1970) three general factors - values, personality structure and curiosity, among other things, affect pupil motivation toward school experiences. He says that motivation towards school is the result of a pupil's own personality and the kinds of values he holds. Those pupils who are very perspective and who believe in the world of ideas are more apt to desire to do good work than those who feel otherwise.

When Frymier constructed his tool for measuring pupil's motivation towards schools, he had largely drawn upon the three general factors: value, personality and curiosity. The tool is designed as the Junio Index of Motivation or JIM scale. In developing the items for this
tool, he used six areas initially. The initial areas of concern are as under:

1) Attitude towards school
2) Value for Education
3) Feeling for other people
4) Concern for material things
5) Sense of personal determination
6) Attitude towards staff

The theoretical assumption constructed behind this motivation index is that motivation is something which comes from within rather than something which comes from without. To use Frymier's own words, "motivation towards school was assumed to represent an internalized state of being which manifested itself outwardly in particular ways of behaviour."

Frymier, as a result of research, has clearly drawn a behavioural and ideational picture of the low motivated.

These studies tend to substantiate the notion that highly motivated and low motivated youngsters are basically different, they think differently, feel differently and behave differently.

To present this picture in a sharper relief, a composite low motivated student is described as under:

1) Low motivated students are unhappy.
2) Low motivated students are thing-oriented.
3) Low motivated students lack confidence.
4) Low motivated students resist change.
5) Low motivated students dislike schools.

To elucidate further the five characteristics of low motivated students, one can say that as compared to the highly motivated students they are not motivated to do good work in school. They feel grouchy, want to run away from home, are sad and full of sorrow, feel full weight of strains and stresses, always feel unhappy and frustrated, have lost all hopes, feel themselves hopeless and helpless, are not encouraged, and are not interested in formal education. Adolescent pupils who are not motivated towards school seem to be unduly obsessed with specific and material things, having little concern for the same. Moreover, these low motivated students believe that things are predetermined regardless of what they do. They are disillusioned about their own capacities. They reflect something of a fatalistic philosophy. Low motivated students are obsessed with their past and are reluctant to change. The finding has been emphasised by Ratchick (1950) when he describes low motivated student as characteristic of dogmatic closed-minded persons. Certainly unwillingness to experience new ideas or admit the dynamic status of our society would seem an appropriate behaviour for persons who resist school. Finally, as might be expected, young people who are not highly motivated to do good work
express an active distaste for several aspects of school life.

This conception of motivation pre-supposes a very personal point of view. It assumes that highly motivated children are attracted towards the whole world of ideas according to their own personality and sense of values. The degree to which they are propelled towards learning in school is directly related to their openness to experience, their personal sense of adequacy and the things they cherish.

As mentioned earlier, the poor quality of outputs may be ascribed to the low quality of students. Besides other factors, it is observed that they are low motivated academically. The system's functioning is bound to be impaired if academically low motivated students are there in secondary schools.

7. Physical Facilities:

Future of mankind, no doubt, depends to a great extent on teachers, but the buildings where schools are run are equally important. The entire physical facilities provided in the form of classrooms, playgrounds, hostels, library, laboratories, art room, music room, administrative block, staff quarters and other physical facilities may be viewed as an input.
The physical facilities in our schools are in a state of neglect and despair. Often ordinary facilities like a good library, good classrooms, black boards, toilets, etc., are lacking.

For generations the educational process has been taking place in self-contained classrooms. The traditional classroom with a prescribed number of students is still common in our schools.

Very little effort is made to integrate teaching and learning with other physical facilities as a sub-system; each facility serving a unique function and contributing to the total system of secondary education.

Physical facilities experts who have followed recent changes in organization, administration, curriculum development and instructional resources urge that the design of a secondary school should be simple, open and flexible. Facilities must be given in accordance with the new educational methods. While there is growing pressure on secondary schools to admit more students, it is also important not to neglect the quality of physical facilities, which demand to endeavour to create within the schools a sub-system of physical facilities calculated to reinforce its impact on the total educational system. It is for this reason that there is a growing trend towards the functional use of physical facilities.
what is actually needed is not simply the facilities with reduced costs but facilities which are functional to meet the new demands of teaching/learning. It should be arranged in such a manner as speeding up learning and invite innovations rather than hamper them. The conceptualization of physical facilities as a sub-system with its input-output mechanisms may enhance our understanding of the role it can play in the total functioning of the teacher-education system.

For this purpose, the physical facilities index is prepared by assigning weightage to different items of the physical facilities input provided in each school and thus the total score for each school is obtained.

8. Achievement Motivation:

Achievement motivation signifies that when the desire for achievement becomes a dominant concern for a person, it expresses restless driving energy aimed at attaining excellence, getting ahead, improving on past records, beating competitors, doing things better, faster, more efficiently and finding unique solutions to difficult problems. Achievement motivation also refers to the need for achievement. It refers to the behaviour of an individual who strives to accomplish something, to do his best to excel others in performance. Achievement motivation also refers to accomplish something difficult, to master
to manipulate and organize physical objects, human beings or ideas, to overcome obstacles and attain a high standard, to excel oneself and to surpass others and to increase self-regard by successful exercise of talent.

Achievement motivation, in the present study, is viewed as one of the inputs of secondary education. This has been measured through the Achievement Motivation Test constructed by Prayag Mehta (1969).

9) **Study Habits:**

The term "Study Habits" implies a sort of more or less permanent method of studying. According to Good, in his book: "Dictionary of Education" (1959)Study habits is the tendency of a pupil or student to study when the opportunity is given, the pupil or students' way of studying whether systematic or unsystematic, efficient or inefficient, etc." Entwistle (1970) says that most students improve somewhat often getting systematic help on methods of study.

Teachers want that students should learn and learn well. Their deep anxiety is how to stimulate among children the desire to learn. And if once this desire is stimulated, how to nurture it and sustain it. The task of learning is not dependent on the teacher alone. It is not only teacher's responsibility but is also the responsibility of the pupils as well. Efficient learning
depends not only on good teaching alone but on satisfactory learning habits also. It depends upon the students' ability to schedule his time, the plan of his study, the habit of concentration, note-taking, mental review, the judicious distribution of his time for study, etc. It means that effective and permanent learning involves the development of proper study habits.

The conceptualization of the study habit as an input in the system of secondary education would provide an understanding of the functioning of the system. This input has been measured through the use of study Habits Inventory prepared by Wrenn.

1.9 Output in Education:

Schools are increasingly being held responsible for what students do or do not learn. Because schools purposefully direct their efforts towards the achievement of certain goals, their "productivity" can be considered to the extent to which their activities produce their intended results. The application of the notion of output to education is now becoming more and more generally accepted. A basic assumption of the proper functioning of the education system is that its output can be defined in meaningful and precise terms for the purpose of analysis and measurement.
In considering a school's productivity the first assumption is that schools have been established for a purpose. Efforts and resources are provided for the operation of a school so that certain objectives are accomplished. A school's productivity is determined by the sum total of its inputs which are interdependent. There are a number of inputs which affect a school's output.

The concept of output incorporates an element of causation. Schools are considered effective to the degree that they bring about "learning". The measurement of output must be in terms of the extent to which the activities of the schools contribute to learning.

Schools exist for one purpose and that is to educate children. They are at the centre of the enterprise and they are the primary concern. One cannot speak of output in education without also speaking of the students and their performance. There is no output one can expect from education apart from students.

The assessment of outputs has been a recognized but unsolved problem. Two of the more glaring inadequacies which stand in the way of output are (i) the failure to specify meaningful and measurable objectives at different levels in the educational enterprise and (ii) the absence of satisfactory vehicles for assessing whether these
objectives have been achieved.

The difficulty is compounded by the fact that various levels of generality are involved at different levels in education. At the national level objectives of education are extremely broad. They are likely to be narrower at the State-level. Objectives will progressively be narrower and more precise as one proceeds to school and individual student levels. Whatever may be the level, the output is ultimately rooted in the performance of the schools and also of individual students.

There is a trend now-a-days to assess the functioning of the system of education either from outside in terms of broader social or economic criteria or from inside in terms of familiar academic standards, norms and criteria. For judging the system's functioning from outside, many difficulties come in the way because the functioning is viewed differently by sociologists, economists, politicians and educationists. Each group views the same situation from a different and limited angle. Since there is no ground for reconciliation among the different points of view, it becomes difficult to determine the criteria for obtaining the quality output or assessing the functioning of the system.
Philips (1968) has suggested the use of the term indicator of quality to assess the functioning of the system from inside. These indicators of quality may be direct and indirect. The direct indicators are scores in an examination or standardized test whereas the indirect indicators are the adaptability of the system to new innovations. In the paradigm, the approach suggested by Philips has been adopted to determine the output of secondary education in the Union Territory of Chandigarh.

1.10 Conclusions:

The paradigm assumes secondary education as a "system" with inputs, outputs and processes. The inputs discussed in the study are briefly defined. The supply of input affects the functioning of the system. The process is what goes on while the inputs are being used. Patterned processes transform these inputs into outputs. So far absent from the discussion is a detailed analysis of the way in which secondary education is carried on. It is not really possible to assert unambiguously that one input is better than another on psychological or social or any other ground and what is true in the case of one input is also true in the cases of all other inputs.

Actually the way in which inputs are transmitted into outputs is largely an area of ignorance. Whereas,
on the whole, the situation is fairly stable, and if there is a substantial change either in the inputs or in the outputs or in the process, it would be possible to say that the consequent change or changes, which are related to this, may be attributed to what may be given a fairly clear causal origin. The assumption is that there is some valid relationship between inputs and outputs.

The relationship between outputs-inputs indicates the functioning of the system. The concept of output, of course, is hard to define but the meaning in which the term is used has been described earlier.

1.11 **Statement of the Problem:**

Secondary education schools have inputs, outputs and functions which do not behave in isolation but are inextricably linked up. The inputs and their function are formally structured for achieving the outputs. In order that the secondary schools function effectively, the relationship between inputs and outputs should be maximized.

To be precise, the study is an attempt to assess, by applying the Systems Analysis Approach, the functioning of secondary schools and test it in the Union Territory of Chandigarh. The problem may be stated as under:

"SYSTEMS ANALYSIS APPROACH TO THE STUDY OF SECONDARY SCHOOLS IN THE UNION TERRITORY OF CHANDIGARH".

1.12 **Need and Justification of the Study:**

The Indian Education Commission (1964-66) has said
"Destiny of India is being shaped in her classrooms". This is to become true. Our schools should provide quality education. For giving quality education, it is essential that different inputs of the schools are maximised to produce quality outputs. Conceptualising schools as a social system, it can be said that the system consists of a number of inputs like students, teachers, leadership behaviour, organisational climate, teacher morale, achievement motivation, academic motivation, study habits, physical facilities, etc., which function in an integrated manner at the highest level of efficiency to produce quality outputs. In other words, the proper health of the schools depends upon the maximising of input-output relationships.

As discussed earlier, schools should provide quality education by applying the System Analysis Approach. The purpose is to find out which of the inputs are contributing the most and which are making the least contribution to the task of producing quality education. This analysis would help to improve the functioning of the educational system and thereby improve the quality of education.

In the present investigation, the researcher on the basis of her experience as the head of an institution, feels that the quality of education can be tremendously
improved if the existing inputs are properly utilised. Though more finances and resources are needed, which is difficult to get in the immediate future, it is also the assumption of the investigator that much improvement can be brought about if the available resources are put to the maximum use. She thought it would be of interest to study schools in reference to their input-output relationship by applying the Systems Analysis Approach.

1.13 Objectives of the Study:

The objectives of the present study are as follows:

1. To identify the inputs and separate them (theoretically) in order that each of the nine inputs can be subjected to suitable analysis.

2. To study the student input with reference to their social, personal, family and academic background in secondary schools.

3. To study the teacher input with reference to their academic, professional and socio-economic status.

4. To study the organizational climate of secondary schools.

5. To study the input of leadership style of the heads of secondary schools.

6. To study the teacher morale of secondary schools.
7. To study the academic motivation of students in secondary schools.

8. To study the achievement motivation of students in secondary schools.

9. To identify the study habits of students in secondary schools.

10. To study the nature and extent of the physical facilities in secondary schools.

11. To study the academic achievement of the students in secondary schools.

12. To study the innovativeness of secondary schools in the Union Territory of Chandigarh.

1.14 Hypotheses of the Study

The study aims at testing the following hypotheses:

1. There exists a significant relationship between the student input and the output of schools measured in terms of (a) academic achievement of students and (b) the innovativeness of schools.

2. There exists a significant relationship between the teacher input and the output measured in terms of (a) the academic achievement of students and (b) the innovativeness in schools.

3. There exists a significant relationship between the organizational climate of schools as the input and the
output measured in terms of (a) the academic achievement of students and (b) the innovativeness of schools.

4. There exists a significant relationship between the leadership style of school principals as an input and the output measured of the secondary schools in the terms of (a) the academic achievement of students and (b) the innovativeness of secondary schools.

5. There exists a significant relationship between the teacher morale input and the output of secondary schools measured in terms of (a) the academic achievement of students and (b) the innovativeness of secondary schools.

6. There exists a significant relationship between the academic motivation input and the output of secondary schools measured in terms of (a) the academic achievement of students and (b) the innovativeness of secondary schools.

7. There exists a significant relationship between achievement motivation of the student input and the output of secondary schools measured in terms of (a) the academic achievement of students and (b) the innovativeness of secondary schools.

8. There exists a significant relationship between the input of study habits of students and the output of secondary schools measured in terms of (a) the academic achievement of students and (b) the innovativeness of secondary schools.
9. There exists a significant relationship between the input of physical facilities of the school and the output of secondary schools measured in terms of (a) the academic achievement of students and (b) the innovativeness of secondary school.

10. A varying degree of cross-correlation exists between the inputs and the outputs of the secondary schools in the Union Territory of Chandigarh.

1.15 Limitations of the Study:

Any interpretation of the findings of this study must be made only after the consideration of certain limitations. These limitations can be cited as below:

1. The functioning of the schools in the Union Territory of Chandigarh may be judged either from inside in terms of familiar academic standards, norms and criteria or from the outside in terms of broader socio-economic criteria. The present study is confined to judging the functioning of the schools on the basis of former criteria.

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

3. The study also suffers from another limitation. It depends upon the questionnaire technique and interviews as the tools for data collection.
4. The performance of a student is affected by institutional influences. The out of institutional influences are beyond the scope of this study.