CHAPTER I

TECHNICAL INNOVATIONS IN EDUCATION
AND INSTRUCTIONAL STRATEGIES

As far back as the history of education could be traced,
it emerges as a natural characteristic of all human societies.
In primitive societies education was complex and continual.
It aimed at forming the character, aptitude, skills and moral
qualities of an individual who educated himself through a
kind of symbiotic process, rather than being educated. Life in
the family or clan, work or play, rites and ceremonies were
all day-to-today opportunities for learning. From motherly care
to lessons from the hunter father, from observing seasonal
changes to watching familiar animals, or listening to tales
told by the elders and chants of the tribal shaman, all were
eternal sources of learning. These natural, uninstitutionalized
forms of learning have prevailed to the present day in many a
region of the world and they even today continue to be the only
form of education for many.

The adoption of a school structure in education, however,
is a much later process and it appears essentially to be linked
with the systematization and steady increase in the use of
written language and its reading. Learning to read naturally
entailed a master with a number of young men around him as
they were all in appreciation for scholafship. Thus, in course

of time, writing and much later the printing press conferred
on man an immensity of new powers. Consequently education
which was so far predominantly oral, as it involved direct
contact with things and people, had now given way to written
words or books. Books replaced these direct methods of
transmitting knowledge and nurtured the prejudice that the
written word and its oral repetition was the embodiment of all
knowledge. This form of knowledge came to be recognised as
something much superior to that which was learnt from daily
life. Writing became more prevalent and with it increased the
importance of the master. He started handing down the growing
store of knowledge and tradition to his pupils accompanied by
strict authoritarian, scholastic discipline. This set the
pattern for the authoritarian master - pupil relationship which
still prevails in most schools in the world.

However, contemporary needs, the force of circumstances,
social and intellectual demands expect educational institutions
to shed themselves of these characteristics and adapt themselves
more dynamically to the realities and needs of a rapidly
changing world. This demand started in a humble way with the
commencement of renaissance and continued through the subsequent
series of events like reformation, industrial revolution etc.
which brought rapid progress to humanity. Meanwhile economic
progress created by the industrial revolution created an increasing
need for personnel capable of reading, writing and counting

which, in turn, started the spread and popularization of education. With this grew a greater demand for change in the way of imparting education.

Soon came the age of science and scientific discoveries and inventions and they exerted a powerful influence on the development of civilization, opening up vast horizons for knowledge, unleashing new social forces and redefining humanism. Philosophic thought, the new vistas in psychology, and the promotion of living languages to the dignified status of academic disciplines did enlarge the horizon. These brought an extra-ordinary increase in human knowledge. Then came the age of electronics and computers bringing dizzying speed in the advance and knowledge of man and it left virtually no aspect of the physical or social universe unmodified. As a result of this, many complex changes, varying greatly in nature, took place. With these came the problem of increase in population and the subsequent competition in all walks of life. Now it is felt that man should be better equipped to stand the strain of this competition, to live upto his expectation and to project his personality. Education, therefore, has a much greater responsibility now than it had a few decades ago. As the report of the International Commission on the Development of Education (1972) has put, education has now the basic duty of teaching men the art of living, loving and working in a society which they must create as an embodiment of their ideal'. To enable this, it was

commonly felt that the existing rigid and authoritarian patterns of instruction are to be replaced by structures allowing more participation which alone, it is thought, would help in imparting knowledge and higher order cognitive skills like critical and analytical thinking and bring in abilities of application, synthesis and evaluation which are deemed to be of utmost importance to-day. This has necessitated more than ever the need for restructuring education. More and more educational thinkers and practitioners got involved in this process of instruction and as a result they have advocated many a technique$ that would enhance learning on the part of the student. This has been sought to be achieved by making the learner more active in the instructional process. This learner centered instruction has led to the devising of different techniques of presenting the instructional material in the ways that would reinforce the learning at various stages on a continual basis. Auto-instructional devices are the latest ones in this direction. Scientific efforts for devising these techniques, with empirical evidence for the effectiveness, were initiated by Skinner (1954) in terms of programmed learning and teaching machines. What has been initiated by Skinner is now being carried on further by others who followed him.

Programmed Instruction

Programmed instruction, although attributed to Skinner, has some tenuous links with the ancient Greeks and strong ancestral

ties with the 19th century Russian psychologist Pavlov and an American, Thorndike. The Socratic discourses were nothing but an attempt in this direction. Pavlov's contribution was to study conditioned reflexes in dogs while Thorndike contributed through his 'law of effect'. This law said that the connection between a situation (stimulus) and behaviour is strengthened only if some success or satisfaction follows the response. Thorndike said bluntly that if the connection between stimulus and response was followed by an annoying a state of affairs, then, the strength of the connection decreased. This principle of rewards through success or satisfaction has come to be known as reinforcement which is the corner stone of programmed instruction.

Whatever may be the basic root of the principles behind this auto-instructional technique, it was Skinner who for the first time, came out with this auto-instructional technique called programmed instruction which is based on his operant conditioning theory of learning. This theory is based on the assumption that a response or operant gets strengthened if it is followed by positive reinforcement. This involves the idea that learning behaviour can be shaped and encouraged by 'rewarding' the correct or useful responses a student makes, at the same time causing undesirable performance to be weakened or extinguished by providing no reward. Skinner has attempted to interweave this and other sound principles of teaching and learning into the texture of this technique. Leith (1964) has listed down the various criteria of sound teaching method which programmed learning materials satisfy. They are :

(i) the learner makes active response to the material;
(ii) teaching matter is carefully arranged and organized;
(iii) the sequence and content of the programme have been
progressively altered until the children for whom it is
intended learn successfully and efficiently; (iv) few mistakes
are made in learning; (v) knowledge of result is given
immediately and (vi) learning is self-paced. As a result of the
inclusion of all these, a linear programme emerges to be a
sequence of small steps of instructional material (frames)
most of which require a response to be made by completing a
blank space in a sentence. To ensure that expected responses
are given, a system of cueing is applied, and each response
is verified by the provision of immediate knowledge or result.
Such a sequence is intended to be worked at the learner's own
pace as individual self-instruction.

Not much later came in Crowder (1959) into the field of
programmed instruction with his branching form. The monopoly
which Skinner held unquestionably so far, was now questioned.
Crowder provided multiple choice answers and the answer the
student selects directs him to a different page in the programme.
The programme of this category is thus a 'scrambled one' which
is read most irregularly. The correct answer leads to a page
on which the next bit of information is given, with new
alternatives. An incorrect answer is pointed out, with some
comments as to why this might have been selected and then the
learner is sent back to make another choice. Crowder believes

that students who are ill prepared should always have a way to go back to simpler materials and those who are well prepared should be able to bypass some of the material. Hence, he provided alternative paths through the material.

The arrival of Crowder gave rise to a controversy as to linear or branching form is more effective. This controversy had its impact everywhere. Different people came out with different format and style. More recently efforts have been made to present programme learning matefial in several other forms and contexts. Whatever might be the format, the sound teaching principle it possessed, and the effectiveness it has so far proved, paved the way for its acceptance as one of the most powerful, effective means for imparting knowledge. The effectiveness of programmed instruction has been studied vis-a-vis traditional approach by Shah (1964), Sharma (1966), Mehta (1973), Pandya (1974) and Reddy (1975) and it was proved beyond doubt that programmed materials taught as well or better than the traditional approaches. Because of this, the technique has now achieved a tentative acceptance by both professional educators and the general public. At this point a careful consideration of the roll of programmed interaction in the total instruction system has been necessary to identify its potentional and utilize it maximally under real teaching learning conditions. More recently efforts have, therefore, been made in this direction. Now programmed learning material is used in different

contexts and formats. Yadav and Govinda (1977), Menon (1978), Ravindranath (1982), Vardhini (1979) and Seshadri (1979) are a few examples of this category.

Instructional Strategies

It has been found, of late, that programmed instruction in its pure form cannot prove effective in all teaching situations for instructional objectives range from the simple objectives of knowledge and comprehension to the complex analysis, synthesis and evaluation. It has been, therefore, found that certain modes of instruction found effective in some situations, were ineffective in other situations. Moreover it has been noticed, as already mentioned, that there are different levels of objectives to be achieved in learning any particular unit and as such a single method alone may not suffice in realizing all those objectives. In fact, such learning situations require several techniques of instruction in order to provide the learner with the various activities and experiences needed for the realization of all the instructional objectives laid down for the course. Hence, what is feasible is to organize all the activities and experiences selected for the occasion in question into a meaningful whole to form a system of instruction. When an organisation of the sort mentioned above is done, emphasis is to be laid on the objectives to be achieved, learner characteristics and other practical considerations. In such

an attempt, programmed instruction will not have a separate
entity. It is to be utilized in combination with other
educational methods and devices. This means the integration
of auto-instructional techniques with other educational
techniques so as to take full advantage of their demonstrated
efficiency to produce the desired student performance. Hence,
research efforts are to be made in integrating programmed
instruction with other educational methods so as to make
instruction most effective under different conditions.

An organisation of such suitable components of instruction,
as stated above, with their functions specified in relation to
the definite objectives to be achieved would lead to the
evolvement of an instructional strategy. An instructional
strategy thus composed, should be visualized as an organized
system of activities which works for the attainment of certain
specific goals. A system of this type, as already seen, is
made up of a number of components that, although different in
their nature and operation, function in a co-ordinated manner
resulting in the achievement of goals or objectives. In an
instructional situation, the components of the system are the
input learning materials and they range over a large number of
techniques and media such as P.L.M., lecture, discussion,
seminar, radio, television, etc. Therefore, an instructional
strategy involves selection and organization of suitable
instructional components with their functions specified in

relation to the specific goals to be achieved. This forms the
process aspect of the instructional system aiming at the
achievement of the objectives of the systdm which should be
seen in terms of actual learning outcomes of the students.
These learning outcomes form the output of the instructional
system.

Problems Related with the Choice of Instructional Components

As has already been discussed, the modern educational
practitioner has a multiplicity of instructional components
intended to help him in his educational mission. However, many
of them, as they are utilized today, have been criticized as
they overlook the complexity of the educative process, fail
to learn from research and are not sufficiently directed towards
training minds and attitudes. Many methods still retain the
traditional aspects of inflexibility and authoritarianism.
Hence, the first question which arises here is that of the
choice of the various media for specific instructional purposes.
The choice, of course, as noted, depends on the objectives to
be achieved, nature of the content to be taught and the
characteristics of the pupils etc.

Apart from the aspects discussed above, there are yet two
other causes that stand in the way of selection of the
instructional components delimiting their chances of choice.
The first of these causes arises from the fact that many of
the newest media available now are the byproducts of research

conducted by scientifically oriented professionals whose
primary interest lies more in technically demonstrating the
feasibility of media and their accompanying devices than
employing them in actual teaching-learning situation. Hence
they gave little thought to the administrative and operational
problems arising from their use. So, it is very difficult for
the educational practitioner to put into practice those
recommendations and research findings supplied by the
professionals in actual classroom situation. The second of
these causes springs from those agencies who are concerned
with development of devices for teaching basing on the
principles arriving at by empirical research findings. In
carrying out their task, the extent at which these agencies
give weightage to the research findings, makes their products
less operationally feasible int the context of the real
classroom situation. These new devices planned to operate in
certain instructional context, have an inbuilt non-flexibility
and therefore, they cannot meet the demands of several
instructional situations because such situations are of high
dynamic character. As a result of this, many of these devices
cannot be integrated into most school situations as they often
demand creation of new conditions under which they may operate
effectively. This would necessitate research and development
activities to be carried out to ensure feasibility of utilizing
research findings under real conditions.

Instructional Strategies - Problems and Scope

It should be noted that educational technology took shape mainly drawing from researches in the field of psychology. It is the researches on learning, especially those pertaining to various conditions for effective learning that gradually paved the way for the process of instruction to be systematized into a technology. Programmed learning as an outcome of such researches marks off one of the significant developments in the initial stage of educational technology. As the process of programmed instruction was being empirically perfected, numerous researches were carried out to look into various aspects of the process. Any report on these studies would show that the approach taken was mainly of a type found in laboratory researches and that they mainly concentrated on identifying specific aspects of teaching learning situations with an attempt to develop reproducible instructional situations. Thus, it is in respect of specificity and reproducibility of these aspects through the application of necessary controls that these studies are akin to laboratory researches. The researches under this approach have led to the identification of relationship of teaching learning behaviour that are too specific to be considered in a generalized way. This fact would be apparent when looked into the controlled situations under which these experimentations were carried out. These researches as a whole, therefore, provide only limited application and as such they cannot be applied in the actual teaching learning situations which involve a

multiplicity of complex factors and their interactions. Again, it should be noted that these complex factors and their interaction vary from situation to situation making each educational situation unique. Such being the case, there exist vast differences between the experimental and actual classroom situation.

The uniqueness of each instructional situation can be seen vividly when a number of such situations in a particular subject is brought under scrutiny. This will show in all their details how the various factors interact in each instructional situation making each distinct from the others. Each instructional situation may differ from the others from the point of view of level of initiation of instruction, instructional requirements, methods and techniques employed for instruction, learner characteristics, etc. All these factors that interact in an instructional situation could be better highlighted when each of these is elaborately studied in connection with the medium of instruction or the language used in the instructional situation. This is because the language used in the instructional situation determines the extent to which the instruction can be effective. In any instructional situation, the factors mentioned above would be distinctly varied in nature and their interaction would make it more complex. In such a complex situation, the language through which communication is made, plays a vital

role and so the individuals involved in the instructional
situation must have to acquire a minimum proficiency in the
language through which they learn if the instruction has to
obtain optimum effectiveness.

India being a multi-lingual country, many languages are
used for instructional purposes. However, as far as the higher
education and other national competitive fields are concerned,
a high proficiency in English language is essential. This shows
the importance of learning English even at school level. Moreover
the teaching of English undoubtedly has something to do with
the progress and prosperity of a country like India. The
evergrowing knowledge of science, technology, philosophy,
literature, etc. is tremendous and is mostly communicated
through English. Hence no serious student can afford to neglect
its knowledge without impairing his personality. Not only that,
in this world of competition in the search for progress and
excellence, not to be left far behind, but to go par with. If not
ahead of other nations, a knowledge of English is of paramount
importance. It is a language of international communication, a
link language, a language of practical importance. So, children
who aspire higher education cannot go far without it for it is
the medium of instruction at higher levels of education. Again,
its role as a library language cannot be denied. Moreover, the
study of English brings a wider vision of the world and perhaps
the same knowledge would serve as a stepping stone to greater

success. Often, the lack of knowledge of English has stood

as a stumbling block in the case of many. No wonder that the

Education Commission (1964-66) realized these facts and

recommended the study of English as an essential feature of

education at the school stage. The Commission in its report

says, 'World knowledge is growing at a tremendous pace,

especially in science and technology. India must not only

keep up this growth but also make her own significant contribu-

tion to it. For this, study of English deserves to be specially

strengthened.'

However, the teaching of English, as practised in India

today, differs in the matter of the stages at which instruction

of it is initiated. In some cases, it starts at the nursery

level where little kids are made to memorize a few of the

nursery rhymes, the alphabet of the language, etc. In some

other cases, it starts either from the K.G. level or Std. I

level. This early exposure to English is made mostly in the

case of English medium schools. However, this is not the case

with schools with different medium of instruction. These schools

introduce English at a later stage, say at the stage of Std.V,

or VI or even at Std. VIII. This fact shows that students even

within a state are exposed to this language at different stages,

and so the period of exposure to English language differs

considerably among the students. As a matter of fact, the more

one is exposed to the language, the better one's chances of

picking up the language. Therefore, the students who start learning English at an earlier stage, are in a more advantageous position than the ones who are introduced to it much later. This causes much disparity among the pupils in the matter of English language ability which would be the base for higher education and national competitive fields. Therefore, any student who would like to attain the minimum proficiency in English language, which is expected of him at hiss stage, should be given a chance through the instructional system to attain it. This calls for the introduction in the instructional system of certain inputs which are very flexible in nature so that the learners can be benefited to the optimum level by using these inputs at their convenience.

However, before discussing any further about flexible inputs, it would be worthwhile to analyse the present situation of English instruction as it would lead to a better understanding of the need for flexible inputs. Hence, it would be of great relevance to see under what various conditions English is learnt, what different methods and techniques are employed for this purpose, what limitations they have and what restrictions are laid on the teaching of English because of the instructional and administrative requirements, etc.

If one probes into the background of the students of a particular instructional situation, it will not take long to realize that they differ considerably from one another. This difference could be clearly marked between students of urban and

rural origin, between high socio-economic and low socio-economic group, between literate and illiterate family. Naturally a student belonging to the high socio-economic and literate family background is bound to have better knowledge in English as he has much more chances to get exposed to the language than a student belonging to the illiterate and low economic background. Similarly an urban student might process better chances than his counterpart from a village, for in villages one comes across very few educated persons. For such a student, perhaps, classroom is the only place wherein he can pick up the language. Thus, the background of the students in an instructional situation differs considerably and the extent of their knowledge in the language also differs accordingly. If the group an instructor faces is heterogeneous as discussed above, a common input given to all would fail since it can cater to the needs of only a few unless the instructor has a variety of inputs at his disposal so that he can utilize them accordingly to the needs of the learners.

The objectives of teaching English also may vary from one instructional level to another. At the pre-primary level, the objectives of teaching English might be to get the students familiar with the phonology of the language, acquaintance with its alphabet, and familiarizing them with the names of a few objects and animals in their situational contexts. At the primary level it might be expected of the students to master a few

structures, a number of vocabulary so that they should be able to listen to the language with understanding, read with comprehension and speak with clarity and write with grammatical correctness and precision. At a still advanced stage, literary appreciation, evaluation, etc. are expected of its students. This shows that different objectives are aimed at different stages and this makes the instructional situations to differ from one another.

In order to achieve the various objectives mentioned in the above paragraph, students are exposed to different materials through different techniques and methods. Starting with the grammar translation method where the rules of grammar are taught along with an attempt to translate the foreign phraseology into the child's own language, a number of methods like direct method, Dr.West's New Method, etc. had been employed in teaching English. The most prevalent methods of today in the matter of teaching English are the structural approach and the situational method. Again, in some schools, especially in English medium schools, the method of teaching employed is that of reading and explaining the unit followed by asking a few questions. In some exceptional cases, there are schools which make use of hardware materials like tape-recorders, film projectors and other audio-visual aids in the matter of teaching English. Rarely are these schools that make use of language laboratory to make the instruction of English all the more perfect.

All these carry ample testimony to the fact that many techniques, methods, aids, etc. are used in the matter of instruction of English thereby making each instructional situation differ from the others.

With regard to the above methods and techniques, it should be noted that most of them take care of some objectives and not all of them. Moreover, many of them do not provide enough scope for interaction and student involvement which are essential for the attainment of various skills for which English is being taught. Many of them continue to be content oriented. They, therefore, often turn the students into passive spectators. Subsequently most of these methods have turned out to be uninteresting and ineffective and have become obsolete. Similarly most of these methods take care of content, matter and do not pay much emphasis on the acquisition of skills for which English is mainly taught. As the XIV Annual Conference report of the English Language Teaching Institutes in India (1979) has put it most of the methods and techniques of teaching English 'Continue to be content oriented rather than skill oriented.' Even the most prevalent methods of teaching English today namely the Structural Approach and the Situational Method are found to be imperfect in the sense that they do not take enough care of the instructional objectives in their totality. Experts who met in Delhi for discussing matters regarding the teaching of English (N.C.E.R.T., New Delhi, Report of the

Conference on the teaching of English in Schools, 1963) found
that the structural approach is being misconceived and misused
often by both teachers and students. 'Too often', say they,
'do we see the drilling of structures, the dry bones of the
language substituted for the presentation of the living thing.'
Similarly, the final report of the Regional Meeting of Experts
on Teaching of English in Asia (1971) has remarked that the
structural approach is 'too mechanical' and that it required
'strong motivation and sophistication more often found in
adults' to learn through it successfully. The same experts found
the effectiveness of the situational method 'left too much to
chance and to the competency and versatility of teachers.' All
these remarks show that methods of teaching English as they are
applied today are ineffective and need improvement. In such a
situation, the direction in which the improvement could be made,
may be by selecting the appropriate features of the above
mentioned methods or approaches, thus, formulating an eclectic
approach which would lead to the maximum attainment of the
instructional objectives.

The factors discussed above namely the differences in the
initiation stages of English instruction, the heterogeneity
of learner population, the multiplicity of methods and
techniques of instruction, failure of different approaches of
teaching English to achieve different instructional objectives
are only a few among the varied factors which demand for an attempt

at increasing the effectiveness of the instructional situation.
A few more factors involved are mentioned in what follows.

As for the teaching of English, instructional situations
also change from the point of view of administration, fixed
syllabus, quality of teachers, instructional liabilities of
having to prepare the pupils for public examinations, over-
crowding of the classrooms, etc. These factors also contribute
to the diversity aspect of the instructional situations. Thus,
inadequate technical skills and technical devices or machines
to help the teacher in his classroom instruction, imperfect
instructional methods, lack of proper teaching aids, the over-
crowded classrooms, all these, often force the teachers to
resort to the hit - or - miss sort of instruction which often
fails to click.

Under these circumstances, the pupils, who have the
aspiration to learn English, are to be provided with the maximum
opportunity to learnt it at their own pace, time and convenience
so as to take the optimum advantage out of it. When any attempt
at providing an opportunity for the sort of instruction is made,
a number of factors other than the ones seen, are also to be
taken into consideration. An insight into the recent developments
in the learning of foreign languages, some acquaintance with the
process of learning and the role that a learner plays in it -
his interaction, participation - would take over a long way
towards making his attempt more fruitful.

In this connection, the recalling of certain recent
developments towards the teaching of foreign languages is of
paramount importance. Recently there occurred a tremendous
change in the prevailing notions regarding the study of languages.
In the past learning a foreign language had often been treated
as if it were an 'elitist, academic or intellectual activity'
which only the most gifted children or adults hoped to succeed.
This belief, however, has fortunately been proved false. 'Now,'
says Strevens (1971), 'we realize that... to learn to understand
a foreign language, speak it acceptably, read it within the
limits of his education, and interests and write it for simple,
practical purposes is within the capacity of all who can
achieve literacy in their own languages.' This shows that anyone
who can pick up his own mother tongue, can easily learn a
foreign language, if, as Strevens puts it, he is 'given the
opportunity to do so.' Such an opportunity can be provided to
the students only if flexible inputs are made available because
the instructional demands are varied in nature as discussed
earlier.

Another idea that is widely accepted by all that are
concerned with the teaching of a language is that learning a
language means acquiring various skills concerned with its usage
and that these skills can only be learnt through student
involvement - through drills, exercises, discussion, etc. In
short, one must work for the acquisition of the various skills

as Clifford (1969) puts it, 'untill it (language) becomes as familiar to you as the habits of dressing or driving a car.' This means that the pupil should be given the opportunity for exposing himself to it. Accordingly the task of evefyone who is concerned with the teaching of English is to provide the learner with the best opportunity for learning and reducing failure.

In the light of all factors that have been discussed, there is a positive need for devising certain strategy for teaching English which would provide the learners with the maximum opportunity for learning at their own pace, ensuring active participation of the learners and gradually leading them to the development of a concept, principle or teaching point. One such input which has the above mentioned characteristics is programmed learning. PLM with its carefully arranged and organized teaching matter, with its inbuilt capacity for active participation and reinforcement, with all its prompting techniques and self paced learning can be a suitable method for solving many of the problems met with in the instruction of English. Moreover as Skinner remarked, PLM has many good qualities of an efficient tutor. Some of these qualities found common to a good tutor and PLM as put down by Skinner (1958) are given below :

(1) A good tutor begins where the pupil is, and does not
    insist on moving beyond what the pupil can comprehend.

(2) A good tutor moves at the rate that is consistent with the ability of the pupils to learn.

(3) A good tutor does not permit false answers to remain uncorrected.

(4) A good tutor does not lecture, instead by his hints and questioning he helps the pupil to find and state answers for himself.

As indicated above PLM has many qualities of a good tutor and,therefore, it can help instruction of English to a great extent by personalizing instruction in the overcrowded classrooms.

Programmed learning as a method of instruction, as already seen, took concrete shape as a result of the efforts made by Skinner (1954). The method advocated by Skinner moves step by step through a single set of materials and is called linear programming. After the introduction of the linear form, a number of forms other than linear, has been used in the matter of instruction. Branching deviated linear, etc. are some of them. In all these forms of PLM, the basic characteristics namely active participation, immediate feedback, and gradual approximation remains the same.

As already seen, although all the programmed learning materials are based on sound principles of learning, their format of presentation may significantly differ. For example, the classical linear programme has got frames of very small size each of which contains small bits of information followed by a question. The teaching point is very gradually approximated in

this type of programme form. It, therefore, may work well with slow learners but learners whose ability is above normal may find it too mechanical and therefore boring. Another form of PLM with larger frames, is not as mechanical as the classical linear form. This type is referred to as deviated linear programme. Students with a fair amount of ability may be able to get maximum benefit out of such a type because this may not appear to them as very boring in contrast to the classical linear programme. In the types mentioned above, the response called for at the end of each frame is unidirectional and so gives less scope for divergent thinking. The branching stype of PLM offers opportunity to the learners to think of alternative responses and thus, giving scope for divergent thinking. Thus, different forms of PLM may also take care of individual learners with varying characteristics.

However, as already noted in the earlier part of the chapter, PLM in its pure form would not be able to take care of all the instructional goals because in gradually approximately a teaching point, the learner will not get the opportunity for seeing the set of teaching points together as to enable him apply his knowledge to solve content problems. For example, a learner taught through PLM the analysis of complex sentences, has to exercise the acquired ability so that it becomes a part of him such an opportunity is not there in PLM. Hence a number of other techniques which are capable of exposing the learners

to various activities and experiences are to be selected,
incorporated, developed, sequenced and integrated into a whole
texture of instruction to make a strategy which is feasible and
effective. Further, such an attempt for systematization of
instruction should be so directed towards the application of the
scientific generalizations of the earlier laboratory studies, as
mentioned earlier, in such a way as to fit them in the actual
setting that teaching-learning situations can be made more
specific and reproducible in the light of the concrete referents
in terms of instructional material, learner behaviour, and other
inputs with specific role for each in the sequence as to yield
predetermined learning outcomes.

Thus, as already noted, instructional situations differ
in nature in terms of student heterogeneity, varied physical
environment, varied characteristics of instructors, etc. and they,
therefore, call for the evolvement of a number of strategies so
as to fit the various levels of instructional situations in the
matter of teaching English. However, when looked into the Herculian
task behind them, the cost involved, time consumed in their evolvement,
and the number of subject as well as methodology specialists required,
such a venture of developing instructional strategies for all levels
of instruction becomes next to impossible for an individual or an
institution within a short span of time. Hence, what is more
feasible is to take up a particular level, and evolve an instructional
strategy so that in the light of which further attempts could be
taken up later.

In this context, the secondary stage is found best for the purpose for it is at this stage educational system demands of its pupils to pick up most of the language skills. Moreover it is at this stage pupils are prepared for acquiring language by which higher education is made possible. Education Commission (1964-66) puts it: 'As English will, for a long time to come, continue to be needed as a library language in the field of higher education, a strong foundation in the language will have to be laid at the school stage.' Moreover, it is at the high school level that children are marked off by the characteristics of independence, self-respect, challenge-taking, recognition, etc. So they would naturally opt for something that is noval, that would bring independence, recognition, etc. for them. In addition, pupils at this level will have sufficient knowledge in the language to go through the auto-instructional and respond to it satisfactorily so as to bring about the desired result. Hence Stds. IX and X were selected for the experimentation in the instruction of English.

Teaching of English Grammar

Of all the sections of English, its grammar deserves more attention than any other. This is because grammar is all embracing and hence, it has its sway over all the other sections of English, be it prose, poetry, drama, or novel. Grammar, therefore, is the base of everything. In this connection, an authority in the teaching of English, Dixon (1960) remarks that it is : 'Grammar which forms the real basis of the language. It is grammar structure,

primarily, that serves to distinguish one language from
another.' He further puts it : 'Grammar provides a basis
upon which the foreign students can build.' As grammar is so
important, it is thought that this aspect of English deserves
special attention.

However, in this connection, it should be noted that,
of late, there had been a controversy as to the utility of
teaching grammar at school stage. The anti-grammarians argued
that even without formal teaching of grammar, a native speaker
can use the language with as much ease and skill as or even
better than the one who learnt grammar. Hence, they stood
for the rejection of grammar, altogether from the school
syllabus. In this connection, it should be remarked that this
argument may be all right in the case of a native speaker
who is always exposed to the language and its structure. To
him learning of grammar, therefore, may be an analytical
approach of what he has been using correctly without being
conscious of it. But in the case of a foreigner this argument
is totally inapplicable for he is seldom exposed to the
language. To him grammar is unavoidable. It is a base for him
to build the language and in the absence of which he would be
in utter confusion as Dixon puts it: 'without guidance
which grammar gives him, the student is adrift on a vast sea
of complex language forms which makes little sense to him.
Grammar serves to reduce these forms to set patterns.' On this

instance, the opinion expressed by Morris, (1960) another

experts in the field, is worth quoting. After observing the

whole area of argument for and against grammar teaching, he

concludes : (i) A consideration of grammar is imperative; it

dare not be left to look after itself (ii) A systematic course

calls for grammatical progression concurrent with vocabulary

progression. Hence, every foreign student is expected to have

a systematic knowledge of grammar in the absence of which, as

Handschin puts it, 'he (the student) cannot remember the

multitudinous facts except in grouping governed by principle.'

Hence, the teaching of grammar is of paramount importance when

English is taught in schools.

When it comes to the question of grammar, again arises the

problem of the type of grammar is to be taught. There are formal

grammar, Structural grammar, generative trnaformational grammar.

All the three grammars deal with the same English grammar. The

only difference among them is that they vary in their approach

in exponding the language. Formal grammar is prescriptive in

nature. It expects of everyone to stick to the accepted structures

and patterns. It thus stands for correct usage in communicating

content to others. It prizes standard English, the English

officially accepted as correct, in all situations involving

oral or written communication. This is the grammar which almost

all the text books deal with. Structural grammar, on the other

hand tries to see English with all its diverse patterns of

sentences. It is the result of the attempt made by Fries (1952).
He built the structural grammar by extracting the natural
structures of the language. Meanwhile Chomsky (1957) came forward
with his generative transformational grammar in which he brings
a set of rules for generating the sentences of the language. He
deals with the language in terms of kernel (basic) sentences and
their subsequent growth (transformation) to complicated structures.
Thus, the basic assumption of transformational grammar is that a
language is a set of sentences and that a grammar is a series of
rules which describes as simply as possible how all the sentences
in the language can be formed.

It should be noted in this connection that these developments
arose in the field as a result of renewed interest in linguistics.
Some of these developments are yet in their state of infancy and
therefore, have not stood the test of time to show their worth.
Just as Frie's work was criticized by Noam Chomsky, his work,
in turn, is time and again criticized by the present linguistses
Some of them, says Currie (1973) 'would like to 'shoo' Chomsky
off their paths.' Esper (1968) attributes Chomsky as 'a latter
day Cartesian' who 'has revived antique views of language, and
other moribund doctrines, mentalism, nativism, instructionism and
cognitive theories of psychology.'

Therefore, it is perhaps too premature to expose foreign
pupils to these linguistic exercises before they have been
expanded clearly and proved their worth sufficiently. What is

expected of a foreign student is the acquisition of certain skills which would help him in utilizing the language for his daily purpose. In this connection what Wardhaugh (1971) remarked is worthnoting. 'We are no longer,' says he, 'so exclusively concerned with linguistic issues in foreign language instructions.. We are wrestling with the problem of finding methods that work ... and we try a variety of methods in the knowledge that no single solution ever works at all time.' So what is ideal under the present condition is to expose the learner to formal and functional grammar which always sticks to the correct usage - be it in spoken or written form. It is in this form of grammar usually school grammars are found. Hence the present study has employed formal grammar for its experimentation.

So the present study attempts to develop an effective instructional strategy with a proper sequencing of the latest available scientific techniques that can be utilized along with the existing school resources with the feasibility of scheduling. So an instructional strategy for teaching the students of standards IX and X grammar was planned, evolved and experimented upon so as to introduce individualization of instruction into the existing classrooms and blending it with the prevalent educational system.

Formulation of the Problem : The present investigation, in the light of what has been discussed earlier, is attempted for 'Evolving a Strategy for Teaching English Grammar at High School Level.' The study has made use of PLM in combination with a number of other instructional techniques to evolve an instructional

strategy for teaching the students of Stds. IX and X a few
units of English grammar (prescribed by C.B. S.E., Course A.)
The study involved the identification of a number of components,
their sequencing and integration in such a manner as to provide
the learner at appropriate places with ample opportunity for
interaction, exposure, drilling and exercises so that the
various goals laid down could be achieved. The present study also
involved the validation of the strategy in terms of the students
performance in the criterion tests and the reaction of both
students and experts towards the various instructional components
with which the strategy was constituted.

Apart from the evolvement and validation of the strategy,
the study also attempted to find the comparative effectiveness
of the three forms of Programmed Learning namely linear, deviated
linear and branching so that their effectiveness could be seen
in actual classroom situation. Some studies have already been
done on this aspect. Shah (1971) and Krishnamurthy (1972) paid
attention more on response mode, step size etc. than on the
general comparison aspect. Studies of Kuruvilla (1977) and
Verma (1977) although paid emphasis on different forms of PLM,
they do not give a clear picture as to the superiority of a
particular form over the others. Hence the present study seeks
to establish the relative effectiveness of the three forms of
PLM mentioned above in connection with the teaching of English
grammar. The study, thus, aims to find whether different forms

of PLM with varying characteristics have differential effect on learning.

Although all the three forms of PLM under consideration, have the same characteristics namely active participation, immediate feedback, and gradual approximation, they differ significantly in the matter of style of presentation, frame content and question and response mode. The linear, the first of these forms, is associated with Skinner and it uses small bits of information averaging perhaps two sentences in length. These bits of information are followed by a question usually requiring an answer in the form of a blank to be filled in. The learners are guided in making the correct responses, thereby reducing the possibility of error to a minimum level. In this form of PLM, the teaching point is very gradually approximated and therefore, it may work well with slow learners. However, learners whose ability is above normal may find this form too mechanical and so boring. The form of PLM, with larger frames and with approximation of teaching points through gradual but not as mechanical as in the linear form, is known as deviated linear. Students with a fair amount of ability might be able to get maximum benefit through this form as it might appear to them not very boring in contrast to the linear programme. In the two forms mentioned above, the responses called for at the end of each frame is mostly unidirectional. So these forms of PLM do not provide the learners with much scope for divergent thinking. The branching type of PLM, with its comparatively

bigger frames, with its capacity for explaining why a response
is either correct or incorrect, with its scope for providing
remedial measures and with the question posed at the end of
each frame requiring choice among alternative answers, offers
opportunity to the learners for divergent thinking. Thus, the
three forms differ in format and style. An application of the
three forms of PLM in actual classroom situation would show
different
whether forms of PLM with varying characteristics have
differential effect on learning. Moreover the three forms of
PLM in the present study are not administered in their pure
form. They are combined in a uniform manner with a number of
other techniques so as to give the learners scope for necessary
activities and experiences to achieve the instructional
objectives. Hence it would be worthwhile to learn the comparative
effectiveness of the three forms in combination with the other
techniques. An establishment of the relative effectiveness of
the three forms of PLM might thereby lead to their increased and
relevant application for instructional purposes at school level.

In addition, the study also attempts to find the relationship
between student achievement through the strategy on the
comprehensive test and their personality characteristics namely
attitude and intelligence. The study, as already seen, is an
attempt at evolving a strategy for teaching grammar at high
school level. PLM, in the present strategy, is only a component.
It is used in combination with a number of other techniques of

proven worth incorporated and integrated at appropriate
places so as to expose the learners to various activities and
experiences with a view to achieving the various instructional
goals laid down for teaching the specified units of English
grammar to a population having specified characteristics as
entering behaviour. In that way the strategy evolved is
unique and hence there arises a need for highlighting the
relationship between student achievement through it on the
comprehensive test and their personality characteristics, namely
attitude and intelligence. This aspect of the study is deemed
important because it would lead to a clearer understanding of
the effectiveness of the strategy thereby throwing much light
on as how learner attitude and intelligence affect the
learners in their learning. This knowledge, in turn, would
help in improving the strategy in terms of the mode of
presentation of the content matter or from the point of view of
difficulty level. In the same way, it would also help in
introducing alternative methods or providing remedial work by
which learning can be made more effective.

Objectives of the Study

1. To evolve a strategy for teaching English Grammar at
   high school level.

2. To validate the material (strategy) in terms of
   (i) students' performances in criterion tests and
   comprehensive test.
   (ii) students' reaction towards the multi-media instructional
   strategy,

(iii) Experts' reaction towards the multi-media strategy.

3. To find out the comparative effectiveness of the three forms of presentation of programmed learning material namely linear, deviated linear and branching.

4. To find out the relationship between the pupils' attitude towards the multi-media and their achievement in the comprehensive test.

5. To find out the relationship of the pupils' intelligence on their performance in the comprehensive test.

Details regarding the sample chosen, methodology adopted, results obtained and discussion of the results of the study would be presented separately under different chapters.