

CHAPTER III  
METHODOLOGY OF EVOLVEMENT OF  
THE STRATEGY

Methodology of the present study includes four main aspects namely : (i) identification of the various components for the strategy and their development of the software, (ii) evaluation of the strategy, (iii) studying the comparative effectiveness of the three forms of programmed learning material - linear, deviated linear and branching and (iv) studying the relationship between intelligence and attitude of the students and their achievement through the strategy. This chapter attempts to present the first aspect of the methodology namely the evolvement of the strategy. The second aspect namely the evaluation of the strategy is presented in chapter IV, while the third and fourth aspects of the methodology would be taken up for discussion in chapter V.

As already noted in the above paragraph, the present chapter discusses the details regarding the evolvement of the multi-media instructional strategy for teaching English Grammar at High School level. This means identification, selection and sequencing of different components that constituted the strategy and their development and revision. The process, as it involved different phases, was to be carried out at

different stages. How the various phases of the work were carried out, is given in what follows.

The initial step in the process was to have a total picture of the general objectives for which English is taught at High school level. In the syllabus for All India Secondary School Examination, the objectives for teaching English at Stds. IX and X are given as shown under :

- (i) Enlarging the vocabulary of pupils to enable them to read and understand original writings in the language.
- (ii) Developing higher order skills in reading to teach appreciation and judgement.
- (iii) Developing written English skills to enable to write independently, accurately and creatively in subjects of general interest.
- (iv) Building an awareness of the uses of language in various forms of library writings, and
- (v) Creating interest in wider reading for pleasure and profit.

A scrutiny of the above objectives would clearly indicate that they stress the skills of understanding what is spoken, comprehending what is written, reading and writing, and appreciating the language in its various forms. All these objectives for the attainment of which English is taught, are achieved through exposing the pupils to various aspects of the language such as prose, poetry, novel, drama, grammar, etc. Even a cursory glance into the objectives would show that the

objectives are too many and too varied to be achieved through a single technique or method alone. Hence it calls for an organization of a variety of learning experiences. This necessitates the introduction of various modes in the process of instruction which would generate appropriate instructional stimuli and treatment of responses. Educational Technology provides a large number of instructional techniques of proven effectiveness through the application of which learning can be enhanced. However, one cannot blindly adopt these techniques in specific instructional situations for each situation is unique in its own way. Therefore, in order to be effective these techniques are to be judiciously employed looking into the learner characteristics, local administration, availability of resources and the feasibility aspect. Again, the existence of a number of components, which could be applied for achieving the same objective, makes the procedure of selection more complicated. All these aspects, therefore, are to be taken into consideration before an attempt at selection of the various instructional components for the strategy is made.

The present study had a target population of 14-16 age group of school children, a group marked by the characteristics of independence, moderately challenge taking, high dynamism, etc. Naturally such a group would take pride in doing things independently. Even learning is no exception to this. Hence those techniques involving self-learning were deemed to be more suitable than those that needed constant guidance and persuasion. Again,

techniques like discussion which always provide a lot of scope for active participation would give a boost to their personality and ego, were thought to be acceptable to them. Exercises and assignments, which involved moderate challenge taking would provide the pupils with ample scope for putting into practice the concepts and structures already learnt. These were some of the considerations under the influence of which the selection of the various instructional components was made.

Apart from the considerations discussed above, the feasibility of adopting the evolved strategy also was taken care of. Thus, the availability of the material needed, the ability of the investigator to produce suitable material and availability of time were also taken into consideration. Added to these were considerations on administrative support, academic freedom, heterogeneity of pupils, fixed curriculum, instructional obligations, etc. also helped in their own way to decide the feasibility aspect of the techniques to be selected.

Envisaging all the aspects so far discussed, when the various instructional components are selected, they would have the following attributes : (i) self-learning, (ii) group activities, (iii) teacher involvement, (iv) and moderate challenge taking. It is these attributes that stood as a beacon to guide the selection of the various instructional components that constituted the strategy. Accordingly each unit of the strategy was made of the following components :

- (i) Introduction by the teacher.
- (ii) Programmed Learning Material
  - (a) Linear form
  - (b) Deviated Linear, and
  - (c) Branching form
- (iii) Tables and Charts
- (iv) Exercises and Assignments
- (v) Key to Exercises
- (vi) Summary
- (vii) Criterion Tests

#### Hypotheses

It was hoped, when a strategy framed out of the components mentioned in the above paragraph is administered on a group of students whose potentialities were known to the investigator, it would be quite effective. This was because the components were identified and selected in accordance with the characteristics of the pupils, objectives to be achieved, and other considerations. Moreover, all the components, including the auto-instructional material, were incorporated and integrated in such a way as to contribute one another. For instance, the components, PLM imparts information regarding the various concepts of grammar while the tables, provided after the discussion of each concept, would provide enough scope for drills and the assignments given thereafter would offer opportunity for putting those concepts into application. The key to the exercises and assignments also would help them to compare their answer with those given and arrive at the correct answers. Thus, the various components

assist one another in achieving the instructional objectives. It was, therefore, hoped that the strategy would be an effective one to bring out the expected learning behaviour in the children upto mastery level. The maximum attainment of the set objectives through the strategy would imply that the material is effective.

As already mentioned, the strategy was constructed on a scientific ground as it was composed of components known for their proven potentials, sequenced to achieve the set objectives - and therefore it was supposed to arouse better reaction from the students as well as experts in the field.

Similarly, it is a fact that all the three types of PLM employ sound principles of learning. All of them give enough scope for student participation. Hence it was hypothesized that there would be no significant difference in the mean scores of units taught through linear, deviated linear or branching form of PLM.

The strategy was quite a novel one in the actual classroom instruction as it was scientifically evolved basing on the broad instructional goals or objectives. From these broad objectives, specific instructional objectives or intended learner outcomes were spun off and then they were stated in behavioural terms. The various components of the strategy were, then, identified, integrated and developed in order to realise these behavioural outcomes through exposure and interaction

with the material. While selecting the components, attention also was paid to the characteristics of the students for whom they were meant. Hence the components of the strategy suited the characteristics of the pupils for whom it meant; matched the objectives it aimed at; gave them enough scope for interaction; and taught them independently of the book. So it was assumed that the students would have positive attitude towards the strategy. Moreover, it was thought that once the students from their attitude towards the strategy, if it is a genuine one, the same attitude would continue to the end of the implementation.

With regard to the relationships between pupils' attitude and their achievement, studies have previously been made. Doty and Doty (1964), Eigen (1963), Eigen and Feldhusen (1963), Stone (1965) found in their studies no significant relationships between attitude and achievement. However, studies conducted by Bhushan (1973), Singh<sup>n</sup> (1972), Brinkmann (1966) found significant relationship between attitude and achievement. From the findings of these studies no uniform conclusion could be made. They do not speak uniformly and are therefore equivocal. Hence it was hypothesized that there is no significant relationship between attitude of the students towards the multimedia and their achievement in the comprehensive test.

As already seen, the main components of the multimedia instructional strategy is PLM which irrespective of the format - linear, deviated linear branching - takes care of individual

differences. In PLM the teaching points are carefully arranged and organized on sound principles of learning. Instruction through it begins in accordance with the entering behaviour of the pupils and moves gradually in consistent with his ability to comprehend. It helps him (the pupil) through various prompting technique to find and state the correct response for himself. It does not permit false responses to remain uncorrected. It employs remedial frames to correct and clarify if ever the pupil has made a false response. Thus, PLM provides maximum opportunity to the pupil for learning at his own pace, ensuring active participation, gradually leading him to the development of each concept. As PLM has this inbuilt capacity for active participation, self-correction and self-pacing, pupils of all intelligence levels can learn through it at their own pace and convenience through interaction with the material. Hence it was supposed that the strategy composed of such components as PLM would be suitable for pupils of all intelligence levels. Because of these characteristics of the instructional strategy, it was supposed there would be no significant correlation between intelligence of the students and their achievement in the comprehensive test.

#### Course Content and Task Analysis

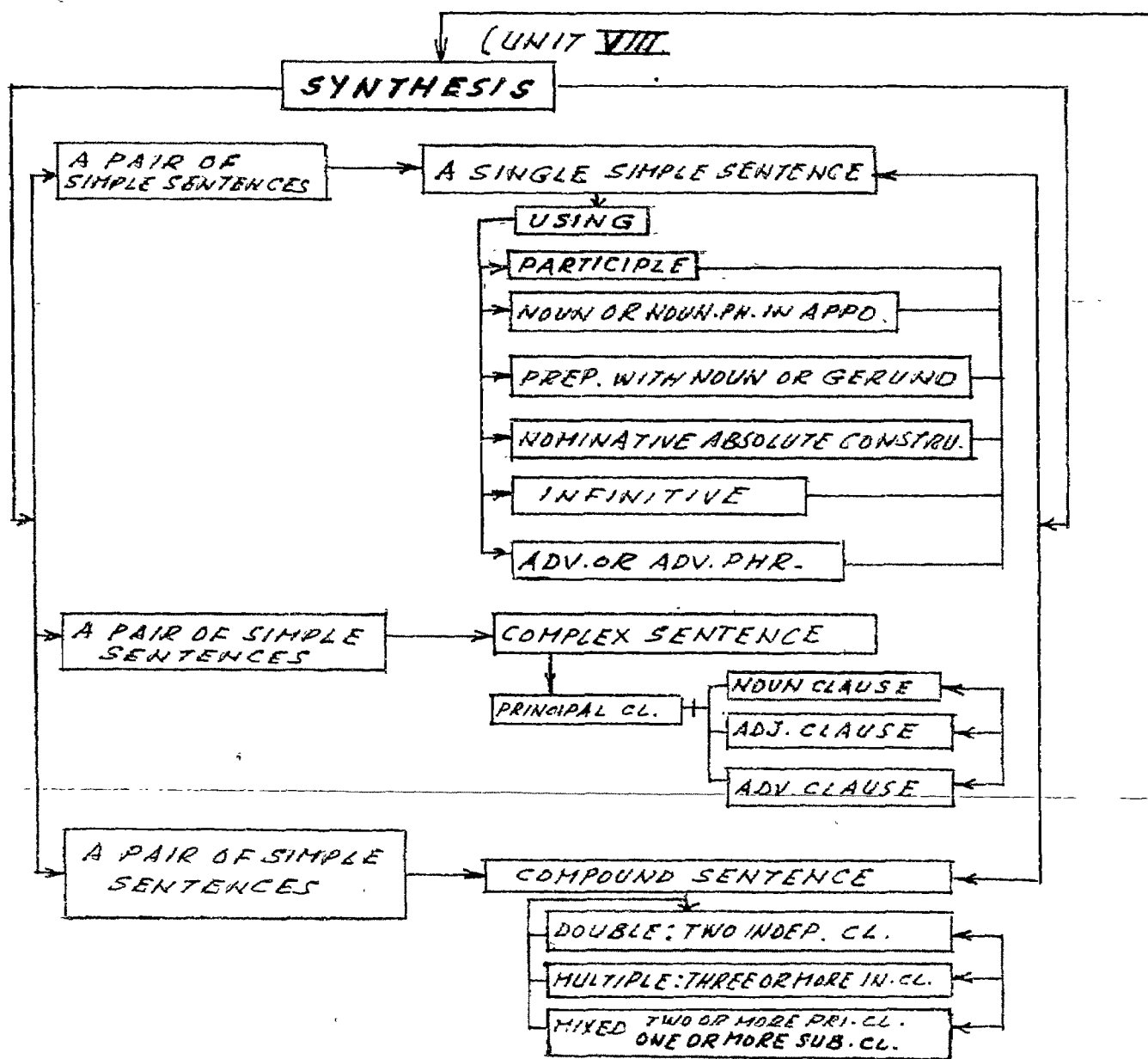
In order to arrive at the expected result or behavioural changes, the students were to be exposed to the content matter using the instructional techniques already selected. As first



step towards this, the various units of content were to be listed down. The course content prescribed by Central Board of Secondary Education for its schools (Stream A - Standards IX and X) two year course consisted of 14 units. Out of them only 9 were selected for the present study as a common link was found running through all these units. The nine units selected for experimentation in the present study are given below :

- (i) Sentences - Function and Structure.
- (ii) Analysis of Simple Sentences.
- (iii) Analysis of Compound and Complex Sentences.
- (iv) Direct and Indirect Speech.
- (v) Active and Passive Voice
- (vi) Transformation of Sentences. (Part I)
- (vii) Transformation of Sentences (Part II)
- (viii) Synthesis
- (ix) The Sequence of Tenses.

Each of the above units were subjected to minute analysis with the result that the interrelationships not only of the various concepts within each unit but also among the various units were arrived at. Basing on the analysis made, flowcharts for the entire course selected for the experimentation as well as for each unit were prepared. (Flow Chart I presents a complete picture of the contents of the entire course selected for the experimentation. Flow Charts II to X bring out clearly the sequence of content matter within each unit).



UNIT : I

SENTENCES: THEIR FUNCTION & STRUCTURE

SENTENCE FRAGMENTS

SENTENCES

ACCORDING  
TO FUNCTION

INTERROGATIVE

ASSERTIVE

AFFIRMATIVE

NEGATIVE

IMPERATIVE

EXCLAMATORY

ACCORDING  
TO STRUCTURE

SIMPLE

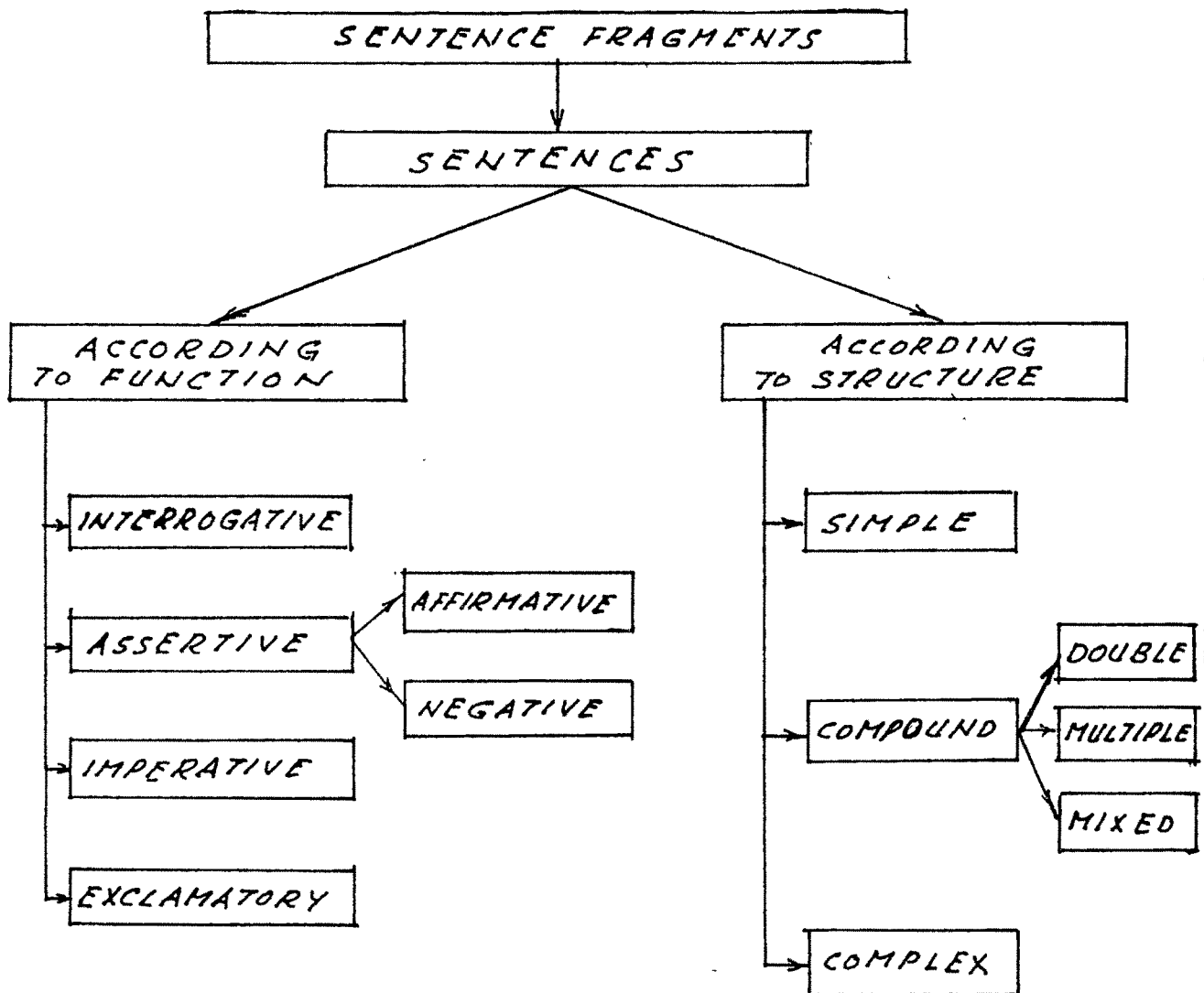
COMPOUND

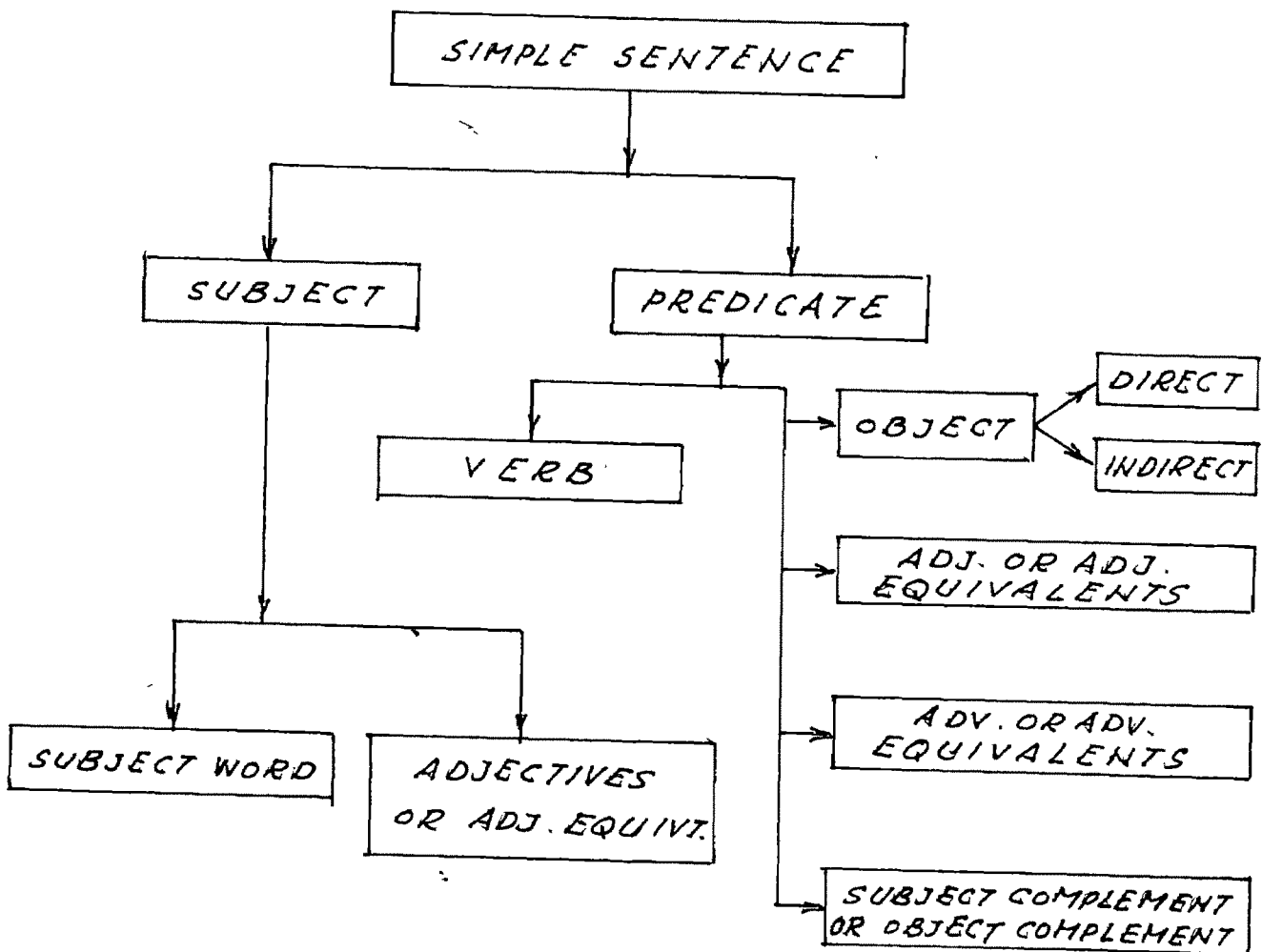
DOUBLE

MULTIPLE

MIXED

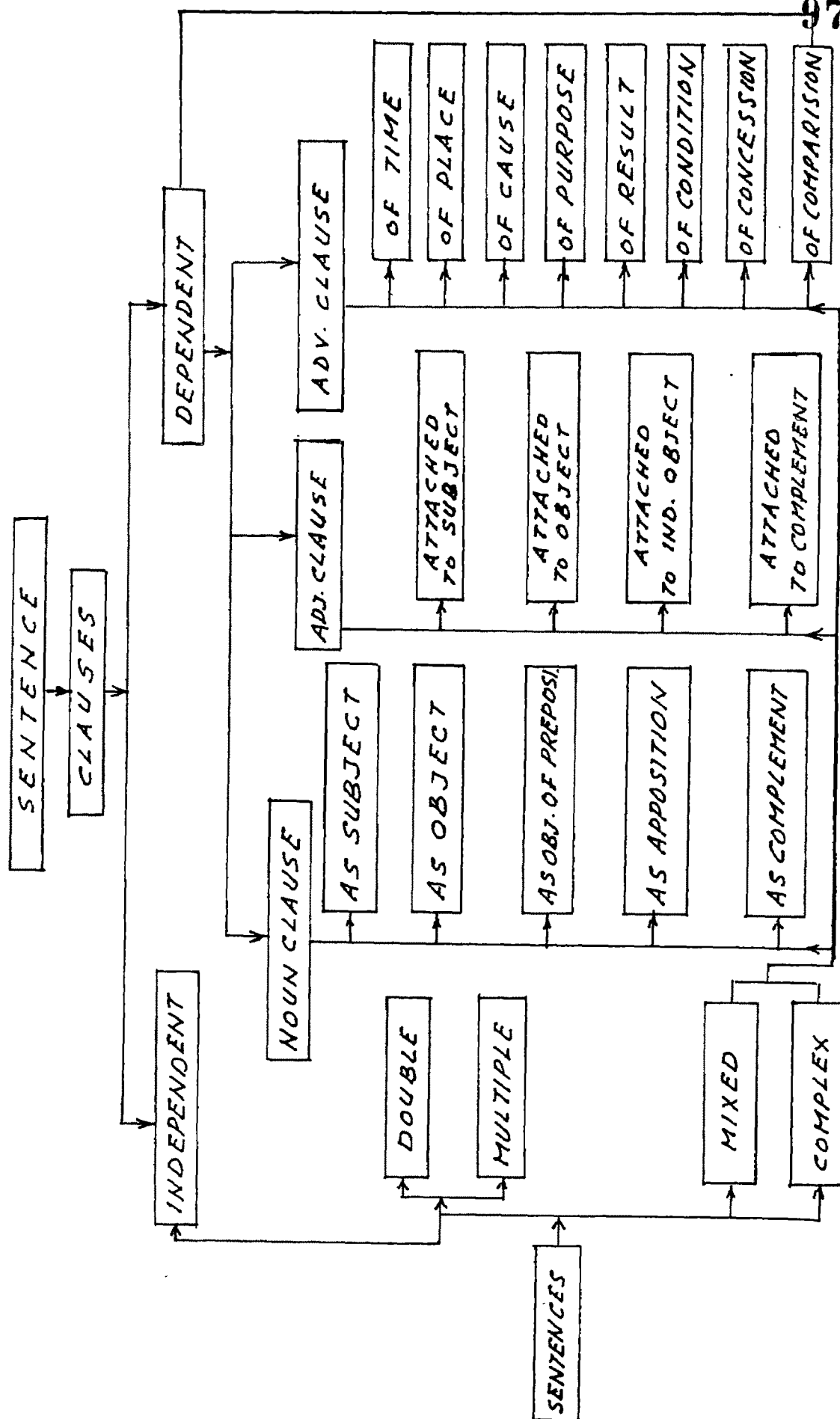
COMPLEX



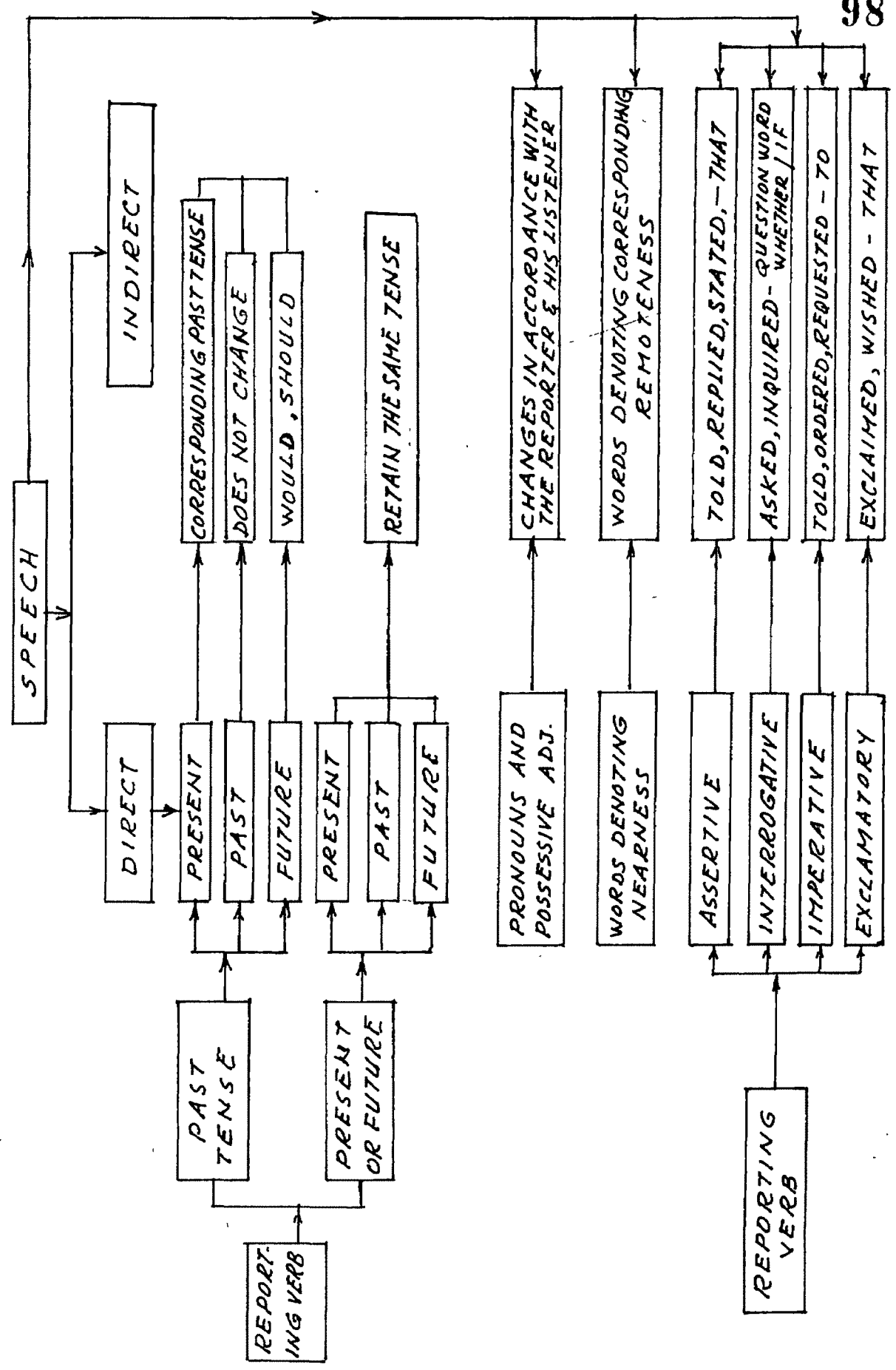
UNIT II- ANALYSIS OF SIMPLE SENTENCES

# FLOW CHART - IV

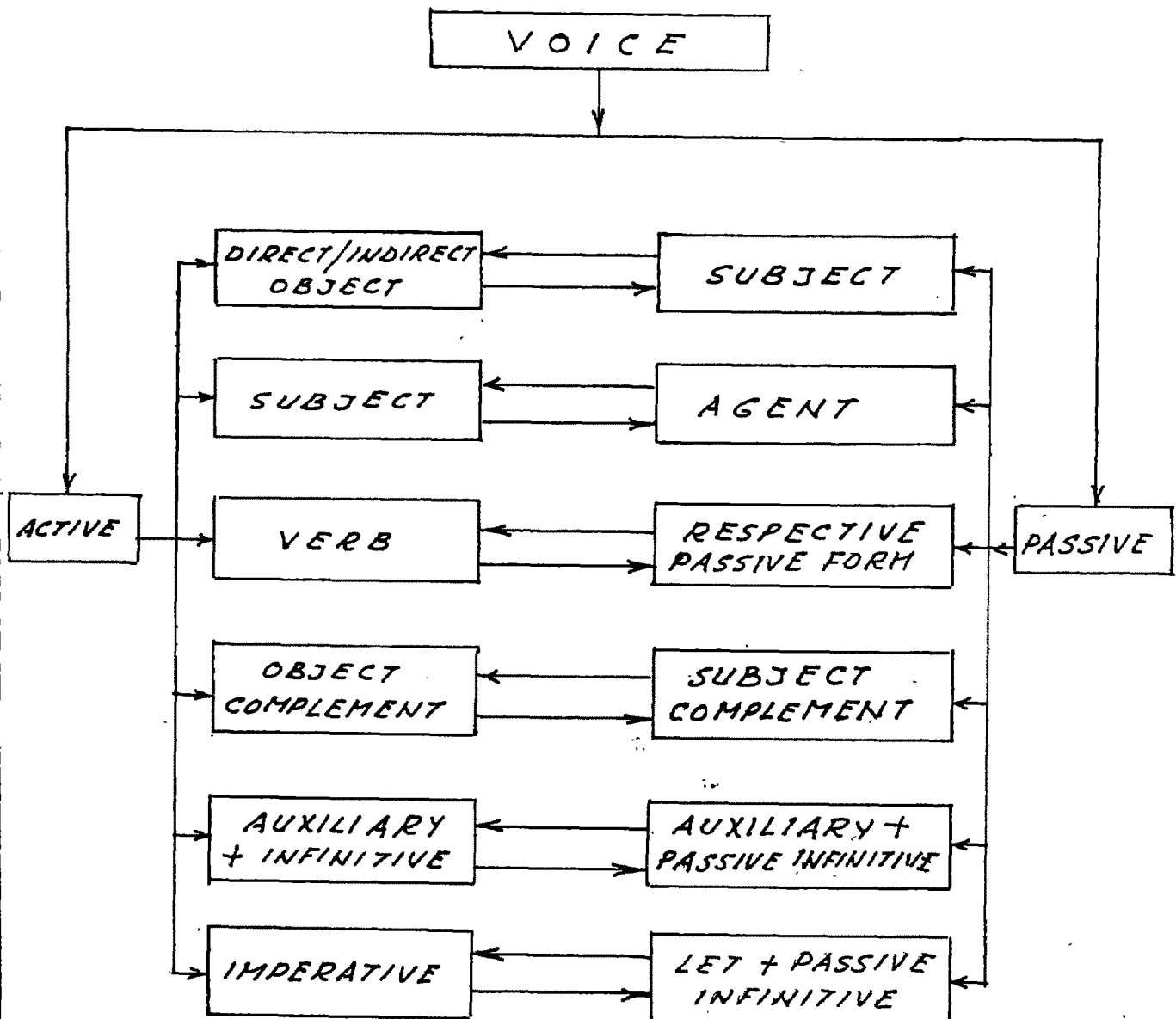
## UNIT III - ANALYSIS OF COMPLEX AND COMPOUND SENTENCES



UNIT IV - DIRECT AND INDIRECT SPEECH

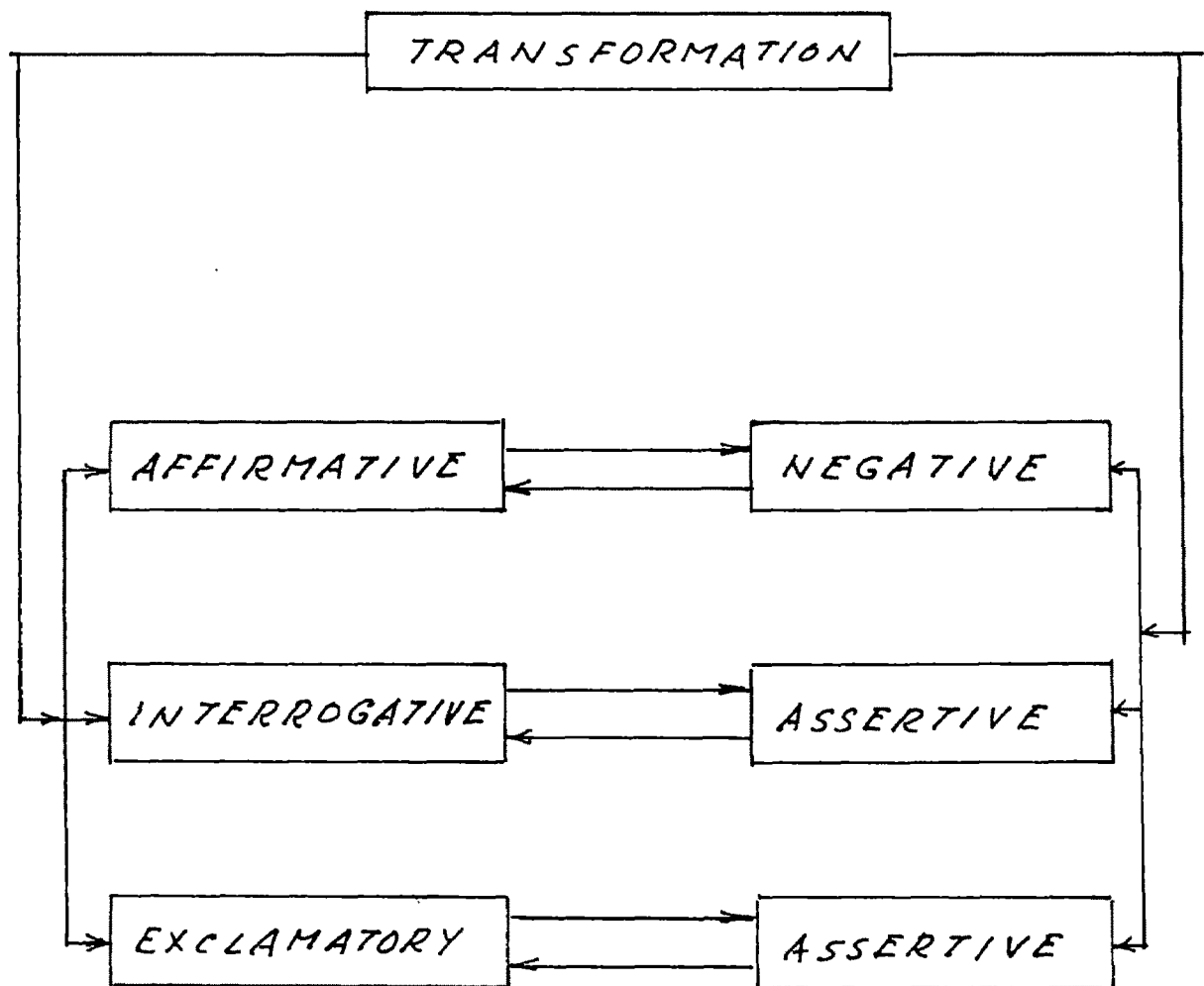


UNIT V - ACTIVE AND PASSIVE VOICE



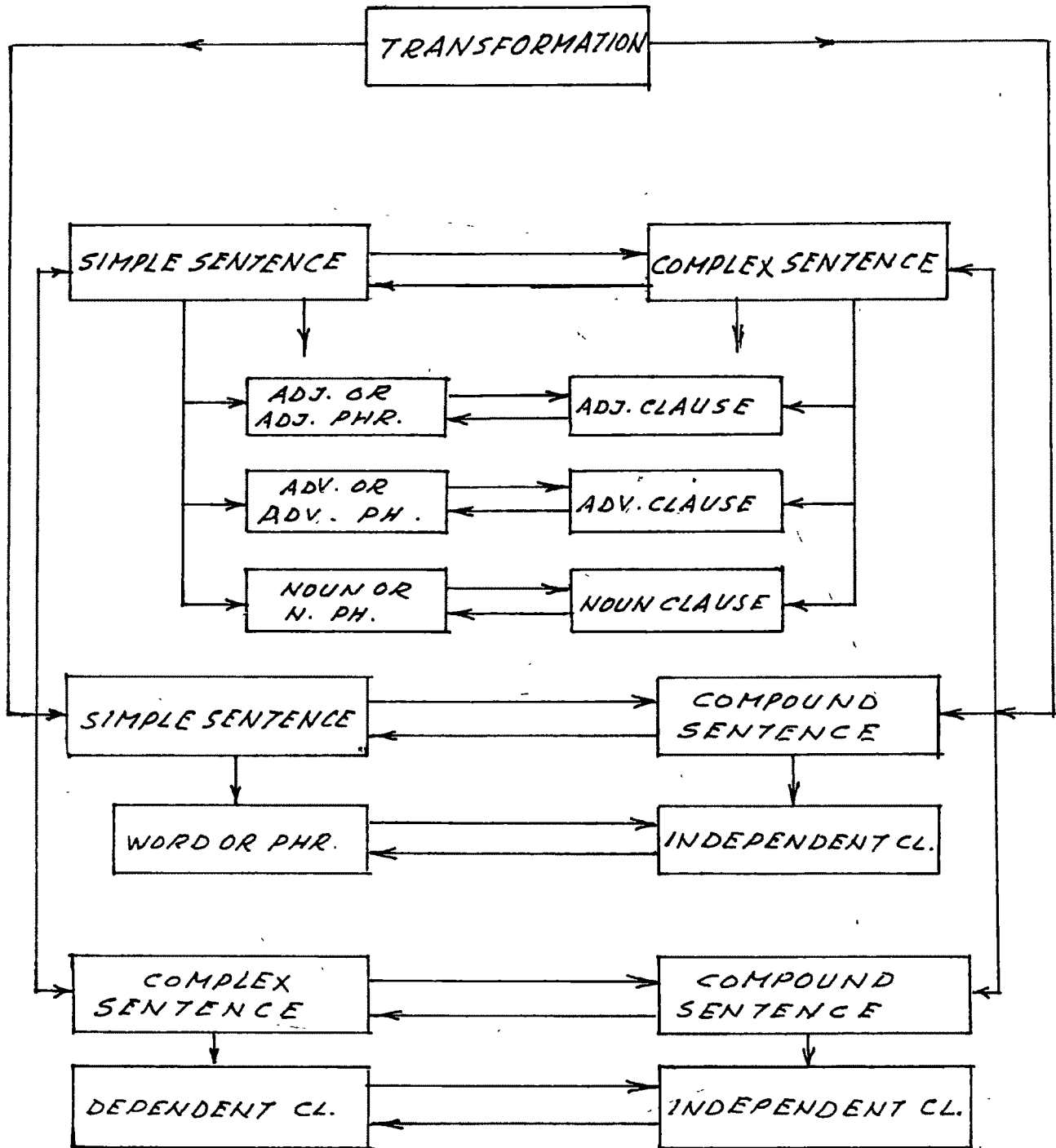
FLOW CHART - VII

10

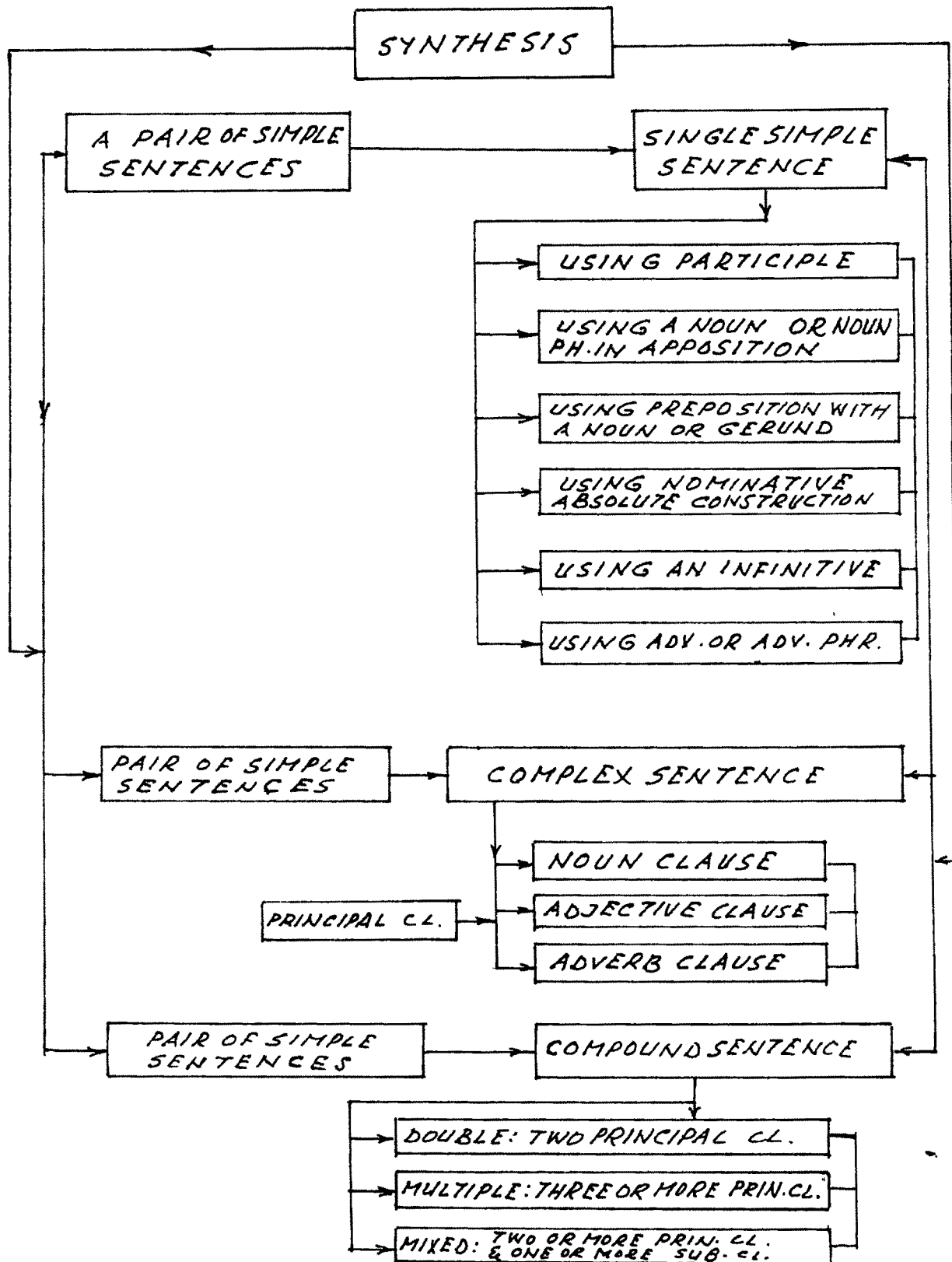
UNIT-VI - TRANSFORMATION OF SENTENCES  
(PART I)



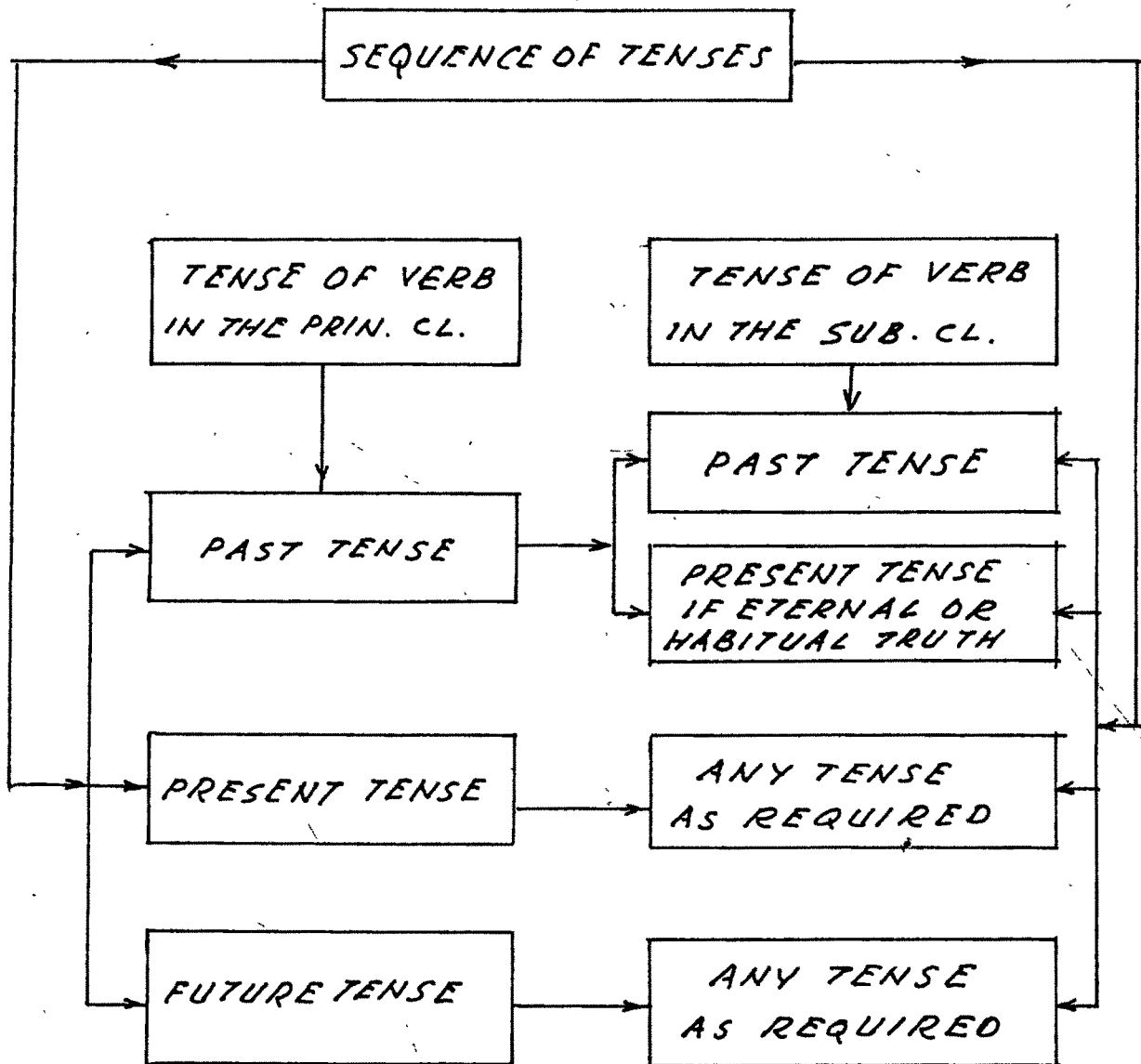
UNIT VII - TRANSFORMATION OF SENTENCES  
(PART II)



UNIT VIII



UNIT - IX



In accordance with the detailed analysis of the content given in the flow charts, specific sequential outline of the various teaching points are given in what follows. These teaching points occur in the programmed text in the same sequence in which they are presented here. The unitwise teaching points in their proper sequence are presented below :

### UNIT I

#### Sentence - Function and Structure

1. Sentence fragment
2. Sentences and their functions (i) Interrogative sentences (ii) Assertive - (a) Affirmative sentences (b) Negative Sentences (iii) Imperative Sentences (iv) Exclamatory Sentences.
3. Punctuation Marks
4. Sentences and their structure
  - (i) Simple sentence
  - (ii) Compound sentence
    - (a) Double sentence
    - (b) Multiple sentence
    - (c) Mixed sentence or Complex Compound sentences
  - (iii) Complex sentences.

### UNIT II : Analysis of Simple sentences

1. Analysis
2. Clausal analysis
3. Subject of a sentence
4. Predicate of a sentence
5. Subject word
6. Adjective, adjective equivalent or phrase (subject)
7. Verb -
  - (a) Transitive
  - (b) Intransitive
8. Object -
  - (a) Direct object
  - (b) Indirect object
9. Adjective, adjective equivalent or phrase (Object)
10. Adverb, adverb equivalent or adverb phrase.
11. Complement -
  - (a) Subject Complement
  - (b) Object Complement.

UNIT III : Analysis of Compound and Complex Sentences

1. Clauses - (a) Independent clauses  
(b) Dependent clauses
2. Dependent clauses - (a) Noun clause  
(b) Adjective clause  
(c) Adverb clause
3. Phrases - (a) Noun phrase  
(b) Adjective phrase  
(c) Adverb phrase
4. Noun clauses used as (a) subject of a sentence  
(b) object of a sentence  
(c) Object of a preposition  
(d) apposition to a noun  
(c) complement of a verb
5. Adjective clauses :  
(a) Attached to the subject  
(b) Attached to the object  
(c) Attached to the indirect object  
(d) Attached to the complement
6. Adverb - (a) Clause of time  
(b) Clause of place  
(c) Clause of reason  
(d) Clause of purpose  
(e) Clause of result or consequence  
(f) Clause of condition  
(g) Clause of concession  
(h) Clause of comparison of degree  
(i) Clause of manner.
7. Analysis of double and multiple sentences.
8. Analysis of Mixed or Complex - Compound sentences.
9. Analysis of Complex sentences.

UNIT IV : Direct and Indirect Speech

1. Speech - (a) Direct  
(b) Indirect
2. Reporting verb
3. Reporting verb and differences in the use of tenses
4. Change in pronouns and possessive adjectives.
5. Words denoting nearness change to words corresponding remoteness.
6. Change - direct assertions to indirect assertions.

7. Change of direct questions to indirect questions.
8. Reporting of direct commands and requests as indirect commands and requests.
9. Reporting of direct wishes and exclamations as indirect wishes and exclamations.
10. Conversion of indirect speech into direct speech.

#### UNIT V : Active and Passive Voice

1. Voice : (a) Active voice  
(b) Passive voice
2. Verb : (a) Transitive verb  
(b) Intransitive verb
3. Change in the subject
4. Change of active form of verb into passive form
5. Change of sentence with two objects into passive voice
6. Change of sentences with complements into passive voice
7. Change of sentences containing auxiliary verbs.
8. Change of interrogative sentences into passive voice
9. Conversion of imperative sentences into passive voice.
10. Conversion of passive voice into active voice.

#### UNIT VI : Transformation of Sentences - Part I

1. Transformation
2. Transforming Affirmative into Negative sentences.
3. Transforming negative into affirmative
4. Transforming interrogatives into Assertive sentences
5. Transforming of Assertives into Interrogatives.
6. Transforming of Exclamatory into Assertive sentences.
7. Transforming of Assertive into Exclamatory sentences.

#### UNIT VII : Transformation of Sentences - Part II

1. Term - Transformation
2. Simple sentence into Complex - using adjective clause.
3. Complex into Simple by reducing adjective clause into an adjective or an adjective phrase.
4. Simple into Complex - by expanding an adverb or adverb phrase into an adverb clause.

5. Complex into simple - by reducing adverb clause into an adverb or adverb phrase.
6. Simple to complex by expanding a noun or noun phrase into a noun clause.
7. Complex to Simple by reducing the noun clause into a noun or noun phrase.
8. Simple into Compound
9. Compound into Simple.
10. Complex into Compound.
11. Compound into Complex.

#### UNIT VIII : Synthesis

1. Synthesis
2. Synthesis of a set of simple sentences into a single simple sentence
  - (a) by using a participles
  - (b) by using nouns or noun phrases in apposition
  - (c) by using a preposition with a noun or gerund.
  - (d) by using a nominative absolute construction.
  - (e) by using infinitives.
  - (f) by using an adverb or adverb phrase
3. Synthesis of Simple sentences into a Complex sentences :
  - (a) Containing noun clause
  - (b) Containing adjective clause
  - (c) Containing adverb clause.
4. Synthesis into Compound sentences
5. Synthesis into mixed or Complex - Compound sentences.

#### UNIT IX : The Sequence of Tenses

1. Sequence of tenses
2. Tenses - (a) Present (b) Past (c) Future.
3. Past tense in the independent clause - Past tense in the dependent clauses.
4. Past tense in the independent clauses - exception (i)  
exception (ii)
5. Independent clause present or future - any verb in the dependent
6. 'Lest' - 'Should'

Entering Behaviour : The strategy in question was evolved for the purpose of teaching the students of Stds. IX and X a few units of grammar. The units selected for this purpose, the flow charts and the teaching points are already presented in the preceeding paragraphs. As everyone knows students at this level do not study grammar for the first time, for they have been studying it over a number of years in the classes prior to standard IX. This means that, at this level, students have already acquired knowledge of English grammar to a certain level and it is on this level that future learning is to be built. Hence it is necessary to know the extent of their knowledge regarding grammar at the time of their entry into instruction, as it would serve as a base for moulding the instructional material. Again, a knowledge of their initial repertoire would help to develop the desired behavioural changes in the pupils. Hence a knowledge of their entering behaviour was necessary.

However, in the present study attempt was made to measure the pupils entering behaviour because of the following reason. The fact that a student is promoted to Standard IX means that he has been successfully exposed to the various grammatical concepts, rules and terminology expected to be learnt in the previous standard (Std. VIII) and that he has managed to get the minimum scores required for being eligible for promotion to Std. IX. This means that each of the students has achieved



at least the minimum terminal behaviour expected to have achieved as a result of instruction at Std. VIII. Naturally everyone knows that it is on the basis of what is taught in Std. VIII that the syllabus for grammar in Std. IX is decided. This means that all the students of Std. IX, who were supposed to undergo the experimentation, possessed the necessary entering behaviour to take the instruction at Std. IX level.

Terminal Behaviour : As already indicated, instruction in the present study was aimed at the attainment of certain objectives. This means that as a result of the exposure of the students to the various units of grammar through the techniques and methods selected for this purpose would result in the desired behavioural changes. In other words it would lead to the realization of the terminal behaviours. The identification and listing down of these terminal behaviours, therefore, are unavoidable because the success of instruction depends upon gearing of the instructional devices to these ends. Therefore, in consideration to the different topics included in the Course, terminal behaviours have been specified in behavioural terms for the complete course and laid down unitwise in what follows :

#### Unit I

- (1) Students will be able to recall in a sentence or two what a sentence fragment is
- (2) Students will be able to define in a line or two what a sentence is.

- (3) If a number of sentences and sentence-fragments are given, students will be able to differentiate the former from the latter.
- (4) Students will be able to define what an interrogative sentence is.
- (5) Students will be able to recall what an assertive sentence is.
- (6) Students will be able to specify the two types of assertive sentences namely affirmative and negative.
- (7) Students will be able to define what an imperative sentence is.
- (8) Students will be able to state what is meant by an exclamatory sentence.
- (9) If a number of interrogative, assertive, imperative and exclamatory sentences are given, students will be able to state to which variety of sentences each belongs to.
- (10) Students will be able to place the proper punctuation marks after each sentence according to the nature of the sentence.
- (11) Students will be able to define in a sentence what a simple sentence is.
- (12) Students will be able to specify in a sentence what a complex sentence is.
- (13) Students will be able to state in a sentence what is meant by a compound sentence.
- (14) Students will be able to identify the three varieties of compound sentences namely double, multiple and mixed or complex - compound sentences.
- (15) If a number of sentences namely simple, complex, double, multiple and mixed are given, students will be able to point out each what type of sentence is.

Unit II

- (1) Students will be able to state in a sentence or two the term analysis.
- (2) Students will be able to specify what clausal analysis is.
- (3) Students will be able to state in a sentence what is meant by subject.
- (4) Students will be able to recall in a sentence the term predicate.
- (5) Students will be able to make out the subject word from the subject portion of a sentence.
- (6) Students will be able to specify the other words in a subject section such as adjectives or adjective equivalents that might occur in the subject portion of a sentence.
- (7) Students will be able to point out the various words occurring in the predicate section namely verb, adverb or adverb equivalents, adjective, adjective equivalents, direct or indirect objects, subject or object complements etc.
- (8) Students will state in a sentence or two the necessity of the study of the structure of sentences.
- (9) If a number of sentences is given, students will be able to separate the subject part from that of the predicate.
- (10) Students will be able to distinguish a transitive verb from an intransitive verb.
- (11) If a simple sentence is given they will be able to analyse the sentence and will state the interrelationship existing among its various parts.

Unit III

- (1) Students will be able to recall what is meant by a clause.
- (2) Students will be able to define in a sentence what an independent clause means.
- (3) Students will be able to specify what a dependent clause means.

- (4) Students will be able to distinguish an independent clause from a dependent clause.
- (5) Students will be able to recall what a dependent noun clause is.
- (6) Students will be able to state whether a noun clause in a sentence is used as subject, object, object of a preposition, complement or as apposition to a noun or pronoun.
- (7) Students will be able to define in a sentence what an adjective clause is.
- (8) From the context, students would be able to state whether the adjective clause is attached to subject, to indirect or direct object or to complement after a verb.
- (9) Students will be able to specify what an adverb clause is.
- (10) When an adverb clause is given in a sentence, students will be able to state whether it is used as adverb clause of time, place, cause, purpose, concession, manner, comparison, or result.
- (11) If asked, students will be able to fill in a blank with the required type of noun clause.
- (12) If asked, students will be able to fill in a blank with an adjective clause.
- (13) If asked, students will be able to fill in a blank with the required type of adverb clause.
- (14) Students will be able to specify the term phrase.
- (15) Students will be able to point out the three types of phrases namely noun phrase, adjective phrase and adverb phrase.
- (16) If asked, students will be able to replace a noun phrase by a noun clause and vice versa.
- (17) If asked, students will be able to replace an adjective clause by an adjective phrase and vice versa.
- (18) If asked students will be able to replace an adverb clause by an adverb phrase and vice versa.

- (19) Given a number of sentences with dependent noun, adjective or adverb clauses, students will be able to identify the kind of dependent clause used in each of them.
- (20) If a number of complex or a compound sentences is given, students will be able to analyse the sentence into clause and find out the relationship existing among the various clauses.

#### Unit IV

- (1) Students will be able to specify what is meant by direct speech.
- (2) Students will be able to state what is meant by indirect speech.
- (3) Students will be able to point out what tenses are to be used in the direct speech in accordance with the reporting verb, when turned into indirect speech.
- (4) Students will be able to make necessary changes of the various pronouns and possessive adjectives in the direct speech in accordance with the reporter and his listener rather than with the original speaker, when turned into indirect speech.
- (5) Students will be able to replace the words in the direct speech denoting nearness by words denoting corresponding distance or remoteness, when changed into indirect speech.
- (6) Students will be able to report a direct assertive sentence into indirect assertive and vice versa.
- (7) Students will be able to report direct questions containing question word into indirect questions and vice versa.
- (8) Students will be able to convert direct questions that do not contain question words into indirect questions and vice versa.
- (9) Students will be able to render a direct imperative sentence into indirect imperative and vice versa.
- (10) Students will be able to report a direct exclamatory sentence into indirect exclamatory sentence and vice versa.
- (11) If a passage in direct speech containing various kinds of sentences is given, students will be able to convert it into indirect speech.

- (12) If a passage in indirect speech is given, students will be able to convert it into direct speech by reversing the rules for turning direct into indirect.
- (13) If a number of indirect sentences are given, students will be able to state to which category each belongs in the direct form.

#### Unit V

- (1) Students will be able to define the term 'Voice'.
- (2) Students will be able to define the term 'active voice' in a sentence or two.
- (3) Students will be able to specify the term, passive voice.
- (4) Students will be able to identify transitive verbs from intransitive verbs.
- (5) Students will be able to convert the verb in the active form into the corresponding passive form.
- (6) If a number of sentences are given, students will be able to recognize active voice from those of passive.
- (7) Students will be able to change sentences with two objects into passive voice and vice versa.
- (8) Students will be able to change sentences with complements into passive voice and vice versa.
- (9) Students will be able to convert interrogative sentences from active into passive form.
- (10) Students will be able to convert imperative sentences in active voice into passive voice.
- (11) Similarly if a number of sentences are given in the passive voice, students will be able to convert them into active by reversing the rules for turning active into passive.
- (12) Provided that a number of sentences is given, students will be able to recognize the voice of the verb and then will be able to change the voice.

Unit VI

- (1) Students will be able to define in a sentence the term, transformation of sentences.
- (2) Students will be able to transform affirmative sentences into negative sentences without changing their sense.
- (3) Similarly students will be able to convert negative sentences into affirmative by reversing the rules for turning affirmative into negative.
- (4) Students will be able to convert assertive sentences into interrogative sentences.
- (5) Likewise students will be able to turn negative<sup>back</sup> into assertive by reversing their rules.
- (6) If a number of assertive sentences are given, students will be able to convert them to exclamatory sentences without changing their meaning.
- (7) Similarly by reversing the rules for converting assertive sentences into exclamatory sentences, the students will be able to convert exclamatory sentences into assertive sentences.

Unit VII

- (1) Students will be able to convert simple sentences containing an adjective or adjective phrase into Complex sentences by turning the adjective or adjective phrase into an adjective clause.
- (2) Students will be able to transform a Complex sentence containing adjective clauses into simple sentences by reducing the clauses into adjectives or adjective phrases.
- (3) Students will be able to turn a simple sentence containing an adverb or adverb phrase into a complex sentence by expanding the adverb or adverb phrase into an adverb clause.
- (4) If a number of complex sentences with adverb clauses are given, students will be able to convert them into simple sentence by reducing the clause into a corresponding adverb or adverb phrase.
- (5) Students will be able to transform simple sentences containing a noun or a noun phrase into a complex sentences by expanding the noun or noun phrase into a clause.

- (6) If a number of complex sentences containing dependent noun clauses are given students will be able to convert them into simple sentences by reducing the clause into a noun or a noun phrase.
- (7) If a number of simple sentences are given students will be able to transform them into double sentence.
- (8) If a number of double sentences are given students will be able to turn them into simple sentences.
- (9) Students will be able to turn complex sentences into compound sentences.
- (10) If a number of double sentences are given students will be able to turn them into complex sentences.

#### Unit VIII

- (1) Students will be able to define in a sentence what the term synthesis means.
- (2) If a set of simple sentences is given, students will be able to combine them into a single simple sentence by using participles.
- (3) If a set of simple sentences is given, students will be able to combine them into a single simple sentence by using words or phrases in apposition.
- (4) If a set of simple sentences is given, students will be able to combine them into a single simple sentence by using a preposition with a gerund.
- (5) If a set of simple sentences is given students will be able to combine them into a single simple sentence by making use of infinitives.
- (6) If a set of simple sentences is given, students will be able to combine them into a single simple sentence by making use of adverbs or adverb phrases.
- (7) Similarly if a set of simple sentences is given students will be able to combine them into a single simple sentence by making use of nominative absolute construction.
- (8) If a set of simple sentences is given, students will be able to combine them into a complex sentence containing a noun clause.



- (9) If a set of simple sentences is given, students will be able to combine them into a complex sentence containing an adjective clause.
- (10) If a set of simple sentences is given, students will be able to combine them into a complex sentence containing adverb clauses.
- (11) If a set of simple sentences is given, students will be able to combine them into a double sentence.
- (12) If a set of simple sentences is given, students will be able to combine them into a single multiple sentence.
- (13) If a set of simple sentences is given, students will be able to combine them into a single mixed or complex-compound sentence.

#### Unit IX

- (1) Students will be able to state in a sentence what the term 'sequence of tenses' means.
- (2) Students will be able to use the correct tense in the dependent clause when the verb in the independent clause is past tense.
- (3) Students will be able to use the relevant tenses in the dependent clauses even when the tense of the verb in the independent clause is past tense (viz.) (1) If the dependent clause states a habitual or universal truth. (2) If the dependent clause is introduced by the word, 'than'.
- (4) Students will be able to use the relevant tense in the dependent clause when the verb of the independent clause is present or future tense.
- (5) Students will be able to use the correct tense in the dependent clause of a sentence, if it is a dependent clause of purpose.
- (6) Students will be able to use the word 'lest' in its correct context.

#### II Development of the Software Material for the Different Components

In accordance with the terminal behaviour listed down earlier, the software material for each component was developed.

The detailed regarding the development of each of the units are given below in the order in which they occur in the strategy.

(1) Introduction by the Teacher : As a matter of fact fact every instruction whether simple or complex needs an introduction as it would highly help the learner. Actually speaking, introduction has the function of preparing the ground for the take off - for the instruction to start with. Moreover, the introduction as an initial step in the process of instruction also goes in tune with the fundamental principle of effective teaching namely 'leading the learner from the known to the unknown'. Therefore 'introduction by the teacher' was included as one of the components in the strategy to provide the learner with appropriate introduction to each of the units in the strategy. The introduction, it was hoped, apart from highlighting the various concepts and terminology required as a prerequisite for effective instruction, would facilitate focusing student attention and concentration by providing adequate background for learning the content matter presented in each unit.

Moreover, this introduction part was supposed to be geared by the teacher by way of discussion thereby providing more chances for interaction which was supposed to arouse interest in the subject and motivate further learning.

This components, as the name indicates, was meant to be employed before the students actually went through the self-

instructional material. For the sake of convenience and guidance for students as well as teachers, a structured introduction is provided in the case of each unit some of which are in lecture form while the others in conversational style.

In framing the structure of this component, the pre-requisites or background knowledge required for understanding the content discussed within each unit was thought out and was developed or recalled to memory either through a lecture by the teacher himself or through a dialogue involving pupils. The following piece of dialogue as example would make clear how 'The Introduction by the Teacher' was developed.

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Eg. of 'Introduction by the Teacher' - UNIT VI

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- ... Teacher : Well, students, you are already aware of the fact that sentences do various functions and we name them by the function they do. Now let us try to review that.  
(Teacher points his finger at one of the students).  
You know that some sentences express statements. What do we call them, Manu ?
- ... Manu : Those sentences that express statements are called Assertive sentences.
- Teacher : Well Manu, you are right. But in our daily conversation we express not only statements, but ask questions, give orders, make requests and express exclamations.  
Well, Lata, What do we call those sentences that ask questions ?
- Lata : We call them Interrogative sentences.
- Teacher : Yes Lata, you are right ... etc.
-

As noticed in the above example the teacher would bring in all necessary prerequisites necessary for understanding the matters presented through PLM. Thus, he creates a genuine atmosphere which is conducive to learning through the component called 'Introduction by the Teacher.'

(2) Programmed Learning Material : As noted earlier, PLM is the most important component in the strategy. Basing on the cognitive aspect of the terminal behaviours and the entering behaviours of the learner each form of the PLM (linear, deviated linear and branching) was developed. Apart from the above considerations the nature of the subject and the instructional objectives also played their role in the development of this component. In short, PLM was developed in consideration to learner characteristics, nature of the subject matter and instructional objectives in hand.

In this connection, it should be noted that the present study has employed three forms of PLM (linear, deviated linear, and branching) for the purpose of the strategy. The salient aspects pertaining to each form of PLM are given in what follows.

(i) Linear Form : This form of PLM is characterized by the following features. It uses small bits of content-matter or information, followed by forced student response or a responses usually in the form of a short written answer. The frames are of linear arrangement, and has the prompting system to avoid the possibility of wrong answers.

(a) Format and Style : In the linear PLM developed for the present study, the frames have been presented between horizontal lines. The correct answers of each frame are provided in the corresponding space on the right hand margin. The students are supposed to cover these answers while going through the frames. When the answer of each frame is written down in the response sheet provided for the purpose, the students could lift the cover and see the correctness of the answer he made by comparing it with the given answer.

In linear form of PLM used in the present study deviated from the traditional Skinnerian type as written down by Holland and Skinner (1961). This deviation was necessary because of the very nature of English grammar and its application aspects. The programmed text on the whole resembled more that of Popham and Baker (1970), Govinda (1975) and Sansanwal (1977) than the traditional Skinnerian type.

(b) Frame Components : Each frame in the programmed text of the present study contained three components (i) the bit of information, (ii) the question posed within the frame and (iii) the correct answer supplied in the margin on the right hand side. Thus, the frame contained a bit of information and a question. The questions either belonged to the completion type requiring one or more words or to the multiple choices

type where the alternatives are given immediately after the blank. The third frame component namely the correct response supplied in the right hand side served as a reinforcer for the students to proceed to the next frame.

The following illustrations from the present programmed text would make these frame components clear :

---

Example I, Unit III, Frame 133

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Let us see whether or not there are adjective clauses attached to other words of the independent clauses other than the ones you have already learnt. Examine the following sentences :

'He sent to his wife who was sick a packet of sweets.'

In the above sentence the dependent clause 'who was sick' qualifies the noun 'wife' which is the \_\_\_\_\_ indirect object of the verb in the independent clause.

---

Example (2) , Unit I, Frame 10

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You have already seen what an interrogative sentence is. Now read the following sentence:

'The sun rise in the east.'

This sentence is not an \_\_\_\_\_ sentence interrogative as it does not ask a question.

---

As already noted, the programmed text (linear form) involved only two types of questioning techniques - the completion type and the multiple choice type. The two frames quoted above would serve as examples of the former type. Examples illustrating the latter type are given below :

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Example I, Unit II, Frame 66

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Now read the groups of words with the addition of the verbs :

- (a) He eats a mango
- (b) She laughed at me.

Are the above groups of words sentences now ? \_\_\_\_\_ (Yes / No)                      Yes

---

Example 2, Frame 19, Unit III

---

Examine the sentence again :

'If the rain stops, I shall go for a walk.'

We have seen that the above sentence consists of two clauses. Which of the two clauses convey the main idea of the sentence ? \_\_\_\_\_ Second  
(first / second ) clause conveys the main idea.

---

As already mentioned, the present study made use of the completion as well as multiple choice type so as to provide the learner with variety in the type of responding thereby eliminating chances of boredom of having to do the same type of response.

(c) Response Mode : Despite the variation in structure, the response mode is maintained uniformly overt in nature throughout the programmed text. The pupils, after reading through each frame, were expected to write down the frame number and the answer on the response sheet provided for the purpose irrespective of completion type or multiple choice. After answering each frame the pupils, then, compare their answer with the correct one given on the right hand side column. If the answer is correct, they proceed to the next frame, if

wrong they reread the frame or when required a few of the earlier frames to understand the concept clearly. Even after this, if a student fails to understand, which, of course is rare, he could take the help of the teacher before proceeding further.

(d) Frame Size : The frames in the present programmed text differed from those of the traditional type in the matter of frame size. Instead of restricting the bit of information to a sentence or two, the present frames often run into a few sentences. However the frames do not present bulk of information. The largeness of each frame owes to the nature of English grammar. Although the size of the frames differed considerably, each frame presents only one point in grammar at a time so as to make the linear sequence smooth. The following examples would make the various aspects regarding frame size clearer :

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Eg. Unit III - Frames 200 - 204

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(200) Now examine the same sentence again. Let us see how the dependent clause functions in relation to the independent clause :

'Zabir is working hard so that he may pass his examination.'

Does the independent clause of the above sentence indicate the purpose of doing the activity implied by the verb of the independent clause ? \_\_\_\_\_ (Yes/No)

Yes

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---

(201) Yes, you are right. The dependent clause actually shows the purpose of the action mentioned by the verb of the independent clause. As the dependent adverb clause 'so that he may pass his examination' shows the purpose of the action implied by the verb of the independent clause, we can call the dependent clause adverb clause of \_\_\_\_\_. purpose

---

(202) In other words we can say that adverb clause of purpose indicates the \_\_\_\_\_ for doing something. purpose

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(203) Now let us proceed to find more examples of adverb clause of purpose. Read the following sentence :

'The thief disguised himself so that no one would recognize him.'

In the above sentence 'The thief disguised himself' is the \_\_\_\_\_ clause of the sentence. independent

The second part of the sentence : 'So that no one would recognize him' is the \_\_\_\_\_ dependent

and one dependent clause, it belongs sentence has one independent to the group of sentences called \_\_\_\_\_ sentences. Complex

---

(204) As the dependent clause in the sentence of the above frame (frame 203) indicates the purpose behind the thief's intension of disguising himself, it modifies the verb. As the dependent clause modifies the verb and as it also indicates the purpose behind the action implied by the verb of the independent clause, it is an example for \_\_\_\_\_ clause of \_\_\_\_\_ adverb purpose

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(e) Prompts : In order to get the student to respond to new subject matter stimuli, programs supply the learner with learning supports or prompts which help to develop low strength behaviour. Prompts are used in PLM for serving two purposes :

(i) They guide minimally so that student responses are not

overcontrolled to the extent that no thought or effect is required (ii) They serve to keep the error rate low so that incorrect responses will not provide unnecessary competition during learning.

The present programmed text (linear form) has made use of all the three types of prompts namely thematic, formal and visual as per the demand in each frame to produce the correct answer.

Thematic Prompts : This type of prompts depend on the general properties of the prompting stimulus rather than on its exact form. It operates as a cue because of its theme, meaning, association, and connotation. The following illustration would make the employment of thematic prompts clear :

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Example 1, Frames 99 - 100, Unit II

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- (99) Now, let us move on to the study of another variety of words that may occur in the predicate part of a sentence.

'He ran fast'

The verb in the above sentence is \_\_\_\_\_  
(transitive/intransitive) as it does not  
have an object.

intransi-  
tive

- (100) The word 'fast' in the sentence in frame 99 modifies the verb 'ran'. So it belongs to the parts of speech called \_\_\_\_\_.

adverb

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Visual prompts are cues made on responses so as to make them obvious to the learner.

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Example I, Frame 68, Unit I

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- (68) A dependent clause if subordinate to the main clause. So it can also be called a \_\_\_\_\_ clause.

Subordinate

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Example 2, Frame 79, Unit II

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- (79) So a verb that takes an object or two after it to make complete statement about its subject is called a transitive verb. As the verb in the sentence 'He beats me' takes an object after it, the verb 'beats' is a \_\_\_\_\_ verb. transitive
- 

A formal prompt is a technique used for guiding the correct response by providing part of the answer required. The frames given are examples for the use of formal prompts.

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Example 1, Frame 147, Unit III

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Adjective clauses do the function of adjectives. Therefore, in most cases they can be reduced to an adj...ive. adjective

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Example 2, Frame 56, Unit IV

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The examples seen in the preceeding frames clearly indicate that the pronouns and the possessive adjectives of the direct speech are changed in accordance with the reporter and his hearer rather than with the original sp \_\_\_\_\_ er. speaker

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However, it should be noted that the present programmed text also at times made use of prompting techniques which are the combination of any two of the prompts described above. Thus, a mixture of visual and formal prompts, or thematic and visual, etc. might be found employed in the programmed text. This was done to add more variety in the matter of prompting thereby bringing greater interest and better learning.

However, it should be remembered in this connection that although prompts serve to enrich the students' learning by helping him discover new responses, they are also necessary

crutches which must be eliminated so that eventually the students responds to the subject matter content alone. Prompts, therefore, must be 'vanished' in the course of the intermediate behaviour that leads to the level of subject matter competence desired. As instruction proceeds, prompts are gradually withdrawn so that the student learns to perform and discover new knowledge without artificial prodding and with only the information or stimuli he will have available when he is to demonstrate subject matter mastery. The present programmed text has also paid attention to the principle of fading or vanishing prompts. The following example would show how this is being carried out.

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Examples, Frames 123-128, Unit II

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(123) Let us see another sentence :

'He made her secretary.'

Does the word 'her' in the above sentence  
come as answer to the question 'Made whom ?'

\_\_\_\_\_ (Yes / No)

Yes

---

(124) As the word (her) comes as reply to the  
question 'Made whom?', it functions as the  
D \_\_\_\_\_ O \_\_\_\_\_.

direct  
object

---

(125) Then what about the word 'Secretary'. It  
refers back to the object. So the word 'her'  
and 'secretary' refer to the same p\_\_\_\_\_n

person.

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(126) You have seen that the word 'secretary' refers  
back to the object or rather complements the  
object. So in other words 'Secretary' can be  
called O \_\_\_\_\_ C \_\_\_\_\_.

object  
complement

---

- (127) In general, we could say that when a word in the predicate refers back to the object, it is called \_\_\_\_\_.

Object  
complement

- (128) Now, let us move to the following sentence :

'The Czars called people liars.'

The object of the above sentence is people.

people

The noun 'liars' complements the object word as the sentence. As the word 'liars' complements the object, it is an \_\_\_\_\_.

object  
complement

(f) Frame Sequence : The frames of every unit of the programmed text generally follow a certain pattern or sequence in order to achieve the objectives. In accordance with the particular behavioural functions they serve, they are classified into different sequential groups. The first of these is the introductory frame sequence which constitute the first building block in a programme. These frames allow the pupils to respond to some behaviour with which they are familiar. These frames serve mainly as bases upon which further behaviour can be built.

Followed by the introductory frame sequence are the discrimination, generalization, chaining and concept sequences. Much of what a learner learns is through these frame sequences of discrimination, generalization, etc. These sequences are more often found in combination than alone. Followed by the above sequences are found practice sequence or review sequence.

Apart from the general pattern of sequence mentioned above, attempt also has been made to bring in certain coherence through the employment of *egrule* and *ruleg* techniques. While *ruleg* approach present rule or generalisation first and then the

students are given examples, the egrule system provides the students with a series of examples from which the pupils are made to arrive at certain generalizations.

As for the present programmed text, egrule system is employed because grammar teaching through this technique enhances learning retention and transfer of materials. However, the ruleg also finds its way in the programmed yext specially where attempt at practical application of the concepts learnt is made.

(g) Types of Frames : A frame is at once a matter of subject content exposition and a matter of behavioural guidance. The purpose of a frame, therefore, is not just presenting a bit of information. Apart from that, it is also a unit of student behaviour. What is done here is bringing this unit of student behaviour under appropriate subject matter control so that the behaviour occurs in a significant and relevant context. As the student progresses through successive frames, the unit of behaviour is expanded and increased in complexity so that the subject will gradually approximate the terminal objectives expected to be achieved. Thus for learning to occur, a frame should consist of the stimulus - the presentation of the bit of information which is used for guiding the student response. These two aspects in each frame comprise a stimulus response relationship. Programmes supply the student with learning supports or prompts to help develop low strength behaviours, thus finally leading to the final outcome<sub>2</sub> Different types of frames, therefore,

have to be employed at various stages of the programme depending on the nature of the change in behaviour that has to be effected in the students. Thus frames may be classified as teaching frames, practice frames and review frames in accordance with the function each does in the programmed text.

The function of a teaching frame is to take the learner from the known to the unknown through a series of frames. It teaches the learner a new concept. The practice frames provide the learner with ample opportunity for practice by which the behaviour formed is strengthened while the review frames help to bring out the relationships between the various facts already learnt in the preceding frames.

Examples of each of these categories used in the present programmed text are given below :

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Example of Teaching & Practice frames : Frames 244 to 250,  
Unit III

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(244) Now let us see another variety of adverb clause. Read the following sentence :

'He acted as I expected.'

In the above sentence ( 'He acted' is  
the \_\_\_\_\_ clause.

independent

The second clause, 'as I expected' is the  
\_\_\_\_\_ clause.

dependent

---

(245) Let us examine the dependent clause, 'as I expected' (of the sentence of the above frame)

Actually this dependent clause modifies the verb 'acted' of the independent clause. As the clause modifies the verb, it does the work of an \_\_\_\_\_. As the clause does the work of an adverb, we can call it an \_\_\_\_\_.

Adverb

Adverb clause.

---

---

(246) Examine the sentence again :

'He acted as I expected.'

The dependent adverb clause 'as I expected' expresses the manner in which he acted. As the adverb clause expresses the manner, we could call it \_\_\_\_\_ clause of \_\_\_\_\_

adverb  
manner.

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(247) In other words we could say that adverb clauses of manner tell the \_\_\_\_\_ or how an action was done. manner.

---

(248) Let us see another example of adverb clause of manner. Read the following sentence :

'Do to others as you wish them to do you.'

In the above sentence, the clause 'Do to others' is the \_\_\_\_\_ clause.

independent

The second clause 'as you wish them to do to you' is the \_\_\_\_\_ clause.

dependent

---

(249) In the above frame the dependent clause, 'as you wish them to do to you' modifies the verb 'do' in the independent clause. As it modifies the verb, it does the work of an adverb. As the clause does the work of an adverb, we could call it an \_\_\_\_\_ adverb  
clause

---

(250) Let us take up the sentence once again :

'Do to others as you wish them to do to you.'

The dependent adverb clause in the above sentence expresses the manner you wish others to do to you.

As the adverb clause expresses the manner of action, we could call it adverb clause of \_\_\_\_\_ manner

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In the example of frames given above, frames 244, 245, 246 are teaching frames while 247, 248, 249, 250 are practice frames. The example that is given below is of the review category.



Example of Review Frame : Frame 61, Unit III

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- (61) Let us revise what you have so far learnt about dependent clauses. Dependent clauses, as you have seen, may do the function of a \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_ or \_\_\_\_\_.  
 As dependent clauses do the work of a noun, adjective or adverb, they are classified into \_\_\_\_\_ types. These are \_\_\_\_\_ clause, \_\_\_\_\_ clause and \_\_\_\_\_ clause.  
 A \_\_\_\_\_ clause is a dependent clause that does the work of a noun.  
 An adjective clause is a dependent clause that does the work of an \_\_\_\_\_.  
 An \_\_\_\_\_ clause is a dependent clause that does the work of an adverb.
- noun,  
adjective,  
adverb
- three, noun  
adjective
- noun
- adjective
- adverb
- 

The frames of the present programmed text (linear units I to IV) have been written keeping in mind the specifications mentioned in the foregoing section.

(ii) Deviated Linear : As already noted the frames in units V, VI, and VII are presented in a style and format different from that are used in units I to IV. Here, unlike in linear of strictly Skinnerian type instead of breaking the concept or information into a number of bits or pieces, each concept or piece of information is presented at a stretch without any break or interruption. However the basic characteristics of PLM namely active participation, immediate feedback and gradual approximation are maintained in this form of PLM also. Here every frame is followed by a number of questions pertaining to the matters discussed in the frame, thus giving rise to active participation. The correct responses given under each frame would make the learner know the correctness

of the answer thereby providing immediate feedback. Similarly, inspite of the larger size of the frames, the arrangement of the information is such that it follows the principle of gradual approximation. Thus, the basic characteristic of PLM remain the same in this type of PLM. However, this form of PLM deviates from the linear in the matter of frame size, question modes, etc. Hence this type of PLM is called deviated linear. The following example would make the various aspects regarding a deviated linear frame clear.

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Example for Deviated Linear frame : Unit VII, Frame No.9

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- (9) In the above frame you saw that simple sentences may be converted into compound (double) sentences by expanding a phrase or group of words into a co-ordinate clause. Now let us see in this frame - whether it is possible to convert a compound into a simple sentence.

Study the following sentences both in Column A and B and see what happens in each case :

A	B
(1) Make haste or <u>you will be late.</u>	(1) Make haste <u>not to be late.</u>
(2) <u>He felt very happy and whistled all the time.</u>	(2) <u>Feeling very happy,</u> he whistled all the time.
(3) <u>They wanted to persuade her to come,</u> so they went to her home.	(3) They went to her home <u>wishing to persuade her to come.</u>

While sentences in Column A are double sentences, those in B are their transformed versions of simple sentences. See in each case what happens when the compound sentence is turned into simple sentence. The underlined principal clause in each sentence in Column A is reduced to form their corresponding

phrases in Column B (The portion underlined). When one of the independent clauses in a double sentence is reduced to a phrase, it is no more a Double sentence but a simple sentence.

For example, take sentence (1) of Column A. The second independent clause in it namely 'You will be late' is reduced to the phrase 'not to be late' to form the simple sentence. Similar are the case with sentences (2) and (3). The underlined independent clauses in them are reduced to form the underlined phrases in Column B.

What does these examples show ? They show that compound (Double) sentences may be converted to simple sentences by reducing one of the co-ordinate clauses into a phrase or word. This is just the reversal of the conversion of simple into compound. In other words we could say that a compound sentence can be converted into simple by reducing one of the co-ordinate clauses into a phrase or word.

See more examples in the table that follows. Study how in each case one of the co-ordinate clauses is reduced to a phrase or word.

Table 8 : Transformation of Compound Sentences into Simple

Compound Sentences			Simple sentences	
Independent clause	Conj.	Independent clause		Phrase
(1) You must work hard	or	you will not get promotion	(1) You must work hard	to get promotion
(2) The boy was disobedient	and so	the teacher punished him	(2) The teacher punished the boy	for disobedience
(3) He was a cripple	and so	he could not ride a horse	(3) He could not ride a horse	being a cripple
(4) He threw off his caat	and	plunged into the river	(4) He plunged into the sea	throwing off his coat
(5) We must eat	or	we cannot live	(5) We must eat	to live

You have thus, noticed that one of the co-ordinate clauses in each of the compound sentences in the table is reduced to a phrase or word to form the simple sentences.

Let us revise what we have seen in the above frame. Answer the following :

- (1) Just as it is possible to convert a simple sentence into compound, so it is possible to convert a compound into a \_\_\_\_\_ sentence.
- (2) When a compound (double) sentence is converted into a simple sentence, one of the co-ordinate clauses is reduced to a \_\_\_\_\_ or \_\_\_\_\_.
- (3) In other words, we can convert compound sentences into simple sentences by reversing the rules for changing \_\_\_\_\_ into compound.
- (4) Reduce the underlined co-ordinate clauses in each of the following sentences into a phrase.

- (a) He was not well, and therefore he could not go to school.  
 \_\_\_\_\_, he could not go to school.
- (b) He not only made a promise but he also kept it.  
 Besides \_\_\_\_\_, he kept it.
- (c) He drew his sword and rushed at his enemy.  
 \_\_\_\_\_, he rushed at his enemy.

Answers :

- (1) Simple (2) Phrase, word (3) Simple (4) (a) being not well (b) making a promise (c) Drawing his sword.

The above frame deals with the process of converting a compound sentence into a simple sentence. It does not break the content into bits as in the case of linear frames. The description goes on uninterruptedly until the whole process is described. This type of presentation, it is hoped, would get the programmes free from dragging, unnecessary repetition and constant interruption. A Table of examples is inserted within the frame ( Of course, it is not originally part of the frame. It is incorporated within the frame to make matters clearer.) At the end of the frame, is given a number of questions which require of the learner to respond. Also the correct responses are given under the frame.

In short, this frame has all the frame components. However, these different components do not occur in the way as they occur in the linear frames. Hence they differ from linear programmes. It is hoped that such a presentation would shed the programmes of their boredom and make them more palatable and pleasant.

(iii) Branching Form of PLM : In this type of programmed instruction more than one sequence or route through the material is arranged and the student follows the sequence determined by his own answers. This practice of providing alternate routes through programmes is called branching or intrinsic type.

This type of programme differs from the linear in many ways. Whereas in linear the student frames his own answers to an open-ended question, in branching a choice among alternative answers to the question posed at the end of the frame is made. From this, it may be stated that in linear the answer depends on the student's ability to recall data while in branching, his ability to recognize it. Linear programme makes use of small bits of units averaging perhaps two sentences in length while a typical branching frame might even consist of one or two short paragraphs to be read by the student, followed by the multiple choice question. Here a correct response leads the pupil into a new body of material and an incorrect response leads through a corrective branch, then back again to the main body of the programme. But on the contrary, a linear frame uses small easily grasped steps in the presentation of the information followed by a forced student response usually in the form of a short written answer.

In short, it could be noted in line with Pipe (1966) that the concern of linear is with 'the science of learning' while that of branching is with 'the art of teaching'. He continues to say that it is this differentiation that prompted Crowder

to come out with his branching style. While he found teaching to be a process of communication, learning is thought to be a process far too subtle and variable to the subject of a few generalities. In consequence, Crowder concentrated his attention upon the improvement of communication between programme and student.

However, in the present programmed text PLM (branching) has not been used in its pure form as conceived by Crowder. Here every frame does not provide alternative responses for choice nor does it lead the learner to branching frames at every step. Here a mixture of branching as well as linear frames go for the creation of the units. As it is a mixture of both, it has the benefit of both. The branching frame with its alternative answer choice might take the learner to remedial frames wherein he finds the needed explanation as why he has been wrong and would lead him to the correct path once again. It, thus, provides greater facility for communication between the programme and the learner avoiding much of repetition and the subsequent boredom. On the other hand, the linear frame with its small bits of information, forced student response, linear arrangement, lesser possibility of student error and the subsequent increased reinforcement makes the matter more palatable than otherwise. When a mixture <sup>of</sup> these qualities come into one, it turns out to be unique. Hence this style also has been adopted for the present study. Given below are a few frames which would make these aspects regarding the branching form as used in the present study clear.

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Eg. : Branching : Frames 15 - 20 - Unit 8

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- (15) In the previous frames you have seen that two or three simple sentences could be combined to form a new simple sentence. Now let us see whether a number of simple sentences could be combined to form any other structure pattern.

Read the following pair of sentences :

'That is the school. I was taught there.'

Let us try to combinat these sentences into a single sentence.

'That is the school where I was taught.'

We have framed a single sentence out of the two simple ones. The newly formed sentence is :

- (a) Simple sentence ( - go to frame - 16 )
- (b) Complex sentence ( - go to frame - 17 )
- (c) Compound sentence - go to frame - 18 )

- 
- (16) The sentence under discussion cannot be a simple sentence as it is made of two subject predicate groups of which one is independent and the other is dependent. As this sentence is made up of more than one clause, it cannot be a \_\_\_\_\_ sentence but a complex sentence.

(go to frame - 17)

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- (17) You are right. The sentence under discussion contains two finite verbs and therefore two clauses. It is a independent complex sentence as it contains one \_\_\_\_\_ clause one and \_\_\_\_\_ dependent clause.

( go to frame - 19 )

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- (18) The sentence 'That is the school where I was taught' contains two finite verbs and therefore two clauses. One of the clauses in it has an independent stand while the other is dependent.
- As the sentence consists of one independent and one dependent clause, it is a complex sentence and not a Compound \_\_\_\_\_ one.

( go to frame - 17 )

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- (19) The example under discussion shows that two or more complex simple sentences may be combined to form a single \_\_\_\_\_ sentence.

(Go to frame 20)

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- (20) Let us see more examples of synthesis. We have already seen examples of two simple sentences joining together to form a single simple sentence. We also have seen instances of simple sentences joining together to form complex sentence. Now examine the following pair of sentences :

'Make haste. You will be late.'

Let us combine these sentences into a single sentence;

'Make haste or you will be late'.

We have made a single sentence out of the pair of simple sentences. The newly formed single sentence is :

- (a) Compound sentence        - go to frame 21
  - (b) Complex sentence        - go to frame 22
  - (c) Simple sentence        - go to frame 23
- 

The above frames show that, if the student makes a correct choice to the multiple choice question, he is led to the next frame in the main stream whereas if he is wrong, he is led through the linear frames of the same concept and is once again brought back to the main stream once he is clear about the concept. In short as Fry (1963) remarks the multiple choice programme has the advantage of its capacity for explaining 'why a response is either correct or incorrect'. More over as the programme always moves according to the pre-determined pattern set for a particular response, it is possible 'to determine the cause of most errors and to prepare an appropriate explanation and remedial branch for insertion into the program at any point.'

The frames of all the three forms of PLM have been written keeping in mind the specifications described in the preceeding sections regarding the nature, sequence and presentation. The first draft of the PLM has been edited by an expert ( the guiding teacher ). Along with the programme, ~~EL~~ the unit tests and the comprehensive test have also been scrutinized keeping in mind the terminal behaviours specified for each unit. Further, the programme has been scrutinized by the subject matter specialists and based on their remarks and comments, necessary modifications have been carried out.

### 3. Charts and Tables

Incorporated along with PLM are tables or charts as per demand of the situation. These tables or charts deal with the specific structure or concept and provide the learner with ample opportunity for exposure and drill through which usually a structure is mastered. They also ~~sd~~ serve the purpose of providing further examples for the structure discussed. Moreover, as the various constituents that make up a structure are marked off by specific columns, it makes intelligibility easier. Above all, these charts and tables would serve in providing a concise picture of what has been discussed prior to it and would help once again to make the concept all the more clear.

The following table as a piece of example would make clear ~~How~~ the tables are prepared.

Example : Table - III - 6

Subject	Adjective clause	Predicate of Principal clause
The boy	whom I met on my way to school	is intelligent
The man	of whom I spoke yesterday	is no more
The girl	whose father is a doctor	won the prize
The student	to whom we gave the book	is coming tomorrow
Gandhiji	who is the father of our nation	had given us his mandate

The table shows that typical sentences belonging to the same structure presented through PLM, are selected and the identical parts of these sentences are placed in the same columns under specific captions so as to make the pattern or structure clear. By studying the table carefully and drilling it, it is hoped that a pupil would master the structure therein exposed.

#### 4. Exercises and Assignments

As a matter of fact, learning a language means mastering a few skills and mastery of skills, of course, depends on constant practice through drill and application. Hence incorporated at appropriate places in the PLM is a number of exercises or assignments. Thus this component in the strategy emphasizes the application aspect of the teaching points whenever required. The various exercises scattered throughout are arranged in accordance with difficulty level and are moderately challenging.

They would provide necessary pattern practice and thereby help to gain mastery over the structures.

In order to make the assignments or exercises, the investigator made a detailed study of the teaching points of each unit as specified earlier in this chapter and based on this analysis, exercises were introduced wherever necessary to give emphasis on the application aspect of the various teaching points. The exercises consisted of items on filling in the blanks, multiple choice, recognizing, defining, transforming, synthesizing, analysing, substituting, etc. as the situation demanded.

#### 5. Key to the Exercises and Assignments

The key to every assignment or exercise is given at the end of each unit and not immediately after every exercise. This is done with the specific intention of not giving the temptation of copying. However, it was found necessary to give the correct answers to these exercises and assignments to encourage the learner to proceed on his own with the confidence of being correct. Moreover, this part of the strategy is meant for making the learner more and more free and independent and making learning easier and more comfortable.

#### 6. Summary

To help easy revision and recapitulation of the version points scattered throughout each unit, it was thought necessary to provide the learner with the necessary link by way of summary.

This was done by the teacher towards the close of each unit through discussion of the various concepts included in each unit.

Along with PLM, a structured summary of each unit was also given to the learner so that he could go through it according to his requirement or whenever the occasion demanded of him to do so. For preparing the summary the investigator studied the various teaching points of each unit as specified in the content analysis and then these points were rendered into prose as precisely and clearly as possible.

#### 7. Criterion and Comprehensive Tests

Along with the formulation of the various terminal behaviours of each unit the criterion test for that unit of instruction had also been developed. It was done so with a view to matching the various items in the criterion test with the specific instructional objectives. In addition to the data they supplied regarding the effectiveness, the criterion tests also served as indicators as to what extent a learner has achieved mastery over the concepts and structures. They also helped in pointing out the weak area pertaining to each learner. This helped the teacher suggest ways and means by which those limitations could be overcome.

It may be stated that the criterion test for each unit of instruction was prepared visualising each terminal behaviour specified for that unit. Hence the items on the criterion tests maintained a one to one correspondence with the specific instructional objectives. So it was hoped, by employing these tests, the pupils' performance could be measured satisfactorily.

As regards to these criterion tests, it should be mentioned that, although question items like filling the blanks, multiple choice items, definitions, etc. are given, more importance has been given to application type questions. This is because the present day expects of a learner of a language to learn more skills in the language than more rules or definitions. What is stressed, therefore, is application.

Also, at the end of the administration of the material, a comprehensive test was taken. It contained almost all types of questions that occurred in the various criterion tests. (The comprehensive as well as criterion tests are given in Appendix along with the instructional material).

Tryout Study : The various components of the strategy including PLM were, thus, sequenced and developed for every unit accordingly as discussed during the course of this chapter. By then, the material was ready for the initial tryout. The initial tryout was done on five students of Std. X of Navrachana School, to see whether it was sequenced properly and how effectively it functioned in actual situation. To begin with, these five students were oriented as how to study through the material. Then they were given the developed instructional material for the first unit. As the students went through the material, the investigator sat beside them. Whenever they were confronted with any difficulty regarding clarity, sequence, terminology, etc., it was noted by the investigator. This process continued till every unit was gone through. Then, in the

light of the remarks made and difficulties expressed by the students, the material for all the units was modified and rewritten. The whole material, then, was given to three content experts to see whether any anomaly has crept into its texture. Finally the whole material was given to a methodology expert (the guiding teacher) for editing. Necessary alterations were made once again as per the suggestions and remarks made by him.

The software material for all the components of the instructional strategy was developed, tried out and suitably modified. The material, by now, was ready for the final tryout or validation experiment. The details regarding the validation are given in the next chapter.

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