C H A P T E R VI

DESIGNING THE TREATMENT

In the last chapter, the experimental design was discussed. Two intact sets of sections of class eight from four different schools were taken to constitute the control and the experimental group. All possible care was taken to keep the intervening variables under control. The independent variable (treatment) introduced in the experimental group was 'programmed teaching'. The control group continued to receive instructions in the customary manner. Two variables, teaching time and content to be taught, were kept constant for both the groups.

1. Treatment Introduced in the Control Group

The control group was taught by the traditional method. Often the term 'the traditional method' is used in a derogatory sense. But in this study, the term is not used in any derogatory sense. For our purpose the term 'traditional' or 'conventional' method means simply a method which the teachers have been using or use in their classes. In other words all practices, techniques, and

approaches which the teachers have been using, have been put under a capsular and a global term the 'traditional method'.

The teachers of the control group were asked to teach their classes to their best of their abilities and in the best possible way they liked. Further, a complete list of teaching items (content to be covered) was given to them. Teachers were also told to consult grammar books. Some references (Eckersley and Eckersley, 1963, Hornby, 1971, Lee, 1971; Miller, 1964; Wood, 1971, Zandvoort, 1962) were also given.

Teachers of the control group were also told that their students would be tested on the given content items after ten days. It was also told that the nature of the post-test would be near-similar to that of the pre-test.

2. Treatment Introduced in the Experimental Group

The programmed teaching strategy was introduced in the experimental group. The idea of programmed teaching (discussed in Chapters III and IV) was now given a concrete shape and necessary packages were developed.

3. Designing Programmed Teaching System

Flow chart 7 gives a schematic representation of programmed teaching showing objectives, elements and their functions. Programmed teaching envisages classroom teaching as a system, having a goal, and interdependent and interactive

components. The components interact and operate so as to achieve the prestated goals.

The first step in designing any instructional system is to specify its objectives. Objectives are pre-stated because, at the time of systems evaluation, one can properly assess the systems output in terms of pre-stated objectives. Other steps in designing a system are, (a) to specify components, (b) to allocate them specific functions and (c) to operate the system.

(1) Stating objectives

Two important considerations should always be kept in mind while fixing systems objectives.

(a) The systems objectives should be congruent with objectives of the meta system and

(b) the objectives should be observable and measurable.

While afixing objectives for programmed teaching, the investigator kept in mind the above two considerations. The objective was the experimental group should secure on the post-test not less than 40% marks. The stated objective (systems objectives) is not in conflict with the meta objectives of classroom teaching or school instruction.

The target of 40% was fixed keeping in mind the gross heteregeneity of the group. The objective could have been 80% or 90% achievement on the post test had the investigator

selected his target population on the basis of initial behaviours and relaxed 'time' variable. But the investigator knowingly did not go for it. He wanted to simulate as closely as possible the field conditions. In schools, under the present administrative and structural conditions, one cannot (and should not) administer a teaching strategy on a slice of students without time restraints. It was this reason that the objective was kept at 40% level.

One point should be clarified at this stage. Fixing up a system's objective, doesn't vitiate the systemist's objectivity; nor does it bias him against or towards a particular system. The crux of the system's approach is to monitor the systems output to effect improvement in it. If a system's output doesn't satisfy stated objectives, the system is re-analysed, re-structured, and re-operated. This adjustment continues till the system meets the required standards.

The objective was therefore fixed before implementing the system.

(2) Specifying systems elements

The second stage in designing the programmed teaching strategy was to identify the elements or the components of the system.

These components viz., students, teachers, and teaching

learning material, were spelled out. No change was made with regard to the placement of teachers and students. In terms of students and teachers, the group was kept in tact. Eighty students of varying entry level behaviours formed the student-component. Four teachers formed the teacher-component.

The third element of the programmed teaching system was the teaching-learning material. Keeping in mind the need of the system and difficulties explored, four different types of materials were developed. Two materials, the teacher's guide and content notes were developed for teachers and two, programmed material and the remedial exercises, were developed for students.

(3) Rationale for developing the package

(1) The Teacher's Guide

The Teacher's guide formed the first part of the programmed teaching package. The following considerations prompted the investigator to develop this part of the package.

(a) All teachers except one were untrained in teaching English. To train them would have consumed considerable time and money. Teacher's Guide, on the other hand, could equip teachers in the technique of teaching English in short time and with minimum expenditure.

(b) Many a time it has been seen that even trained teachers do not prepare their lesson plans in detail and with full

care. They prepare what Gagne (1970) calls the extemporaneous design of instruction. The Teacher's Guide would provide teachers a predesign of instruction. It is speculated that this material will make teachers effective 'managers' of learning.

(ii) The Content Notes

The second component of the programmed teaching package was the 'content notes'. The study had shown that most of the teachers are not well versed in the content they teach. To make good this limitation, it was essential that some material should be developed ~~that would~~ to impart adequate knowledge to teachers about the topic they are required to teach.

(iii) Programmed Learning material (PLM)

The PLM formed the third component of the strategy. It has been contented (Dewal, 1971; Loughary, 1966) that in an age of educational technology, some of the instructional functions of teachers can be conveniently transferred to some other media. This is profitable in two days. Firstly, it relieves teachers of their routined and mechanical roles, and secondly it helps students to move on ~~on~~ at their own pace.

These considerations along with the quality control feature of PLM prompted the investigator to include it in the programmed teaching package.

(iv) The Remedial exercises

The fourth element of the programmed teaching

Strategy was 'remedial exercises'.

Under the existing administrative and structural set up of education, a heterogeneous 'crowd' of students from a 'group' or a 'class. Students of different initial repertoire study the same course. Some students master a given task with less practice than others.

To accommodate slow learners (who require more practice) the investigator developed seven sets of remedial exercises.

(4) Mechanism of Development

The material for the programmed teaching package was developed by the investigator and edited by one of the Assistant Director of the State Institute of Education (SIE), Rajasthan, Udaipur, and the Head of the Department of English, Vidya Bhawan Teachers College, Udaipur. The Assistant Director of the SIE was the programme (Frame) editor and the Head of the English Department of Vidya Bhawan was the content editor.

(i) Developing teachers guides

The term teacher's guide may be a misnomer for those who use this term as an equivalent to 'hints to teachers' or teacher manual. In this study teacher's guide is more than teachers' manuals. It stands for 'programmed teacher behaviour'. All the activities of the teachers ranging from the preparation stage to the evaluation stage were programmed. Teachers were asked to do

exactly what the Guide says. One of the teacher's guide was tried out before using it in the field.

Four important considerations corresponding to three major roles of teachers (Dewal, 1971) were kept in mind while developing teaches guides.

1. A teacher's guide should orient teachers about their pre-instructional behaviours.

2. A teacher's guide should specify teachers' instructional behaviours.

3. A teacher's guide should specify how the programmed material is to be integrated with classroom teaching.

4. A teacher's guide should specify teachers' post instructional notes.

Each Guide contained five steps. In step 1 teachers were asked to read content notes. In steps 2 through five teachers behaviours in the classroom were programmed. The step 2 gave a detail programme about what the teachers should do in the classroom. The Step 3 specified the procedure of integrating PLM with the classroom teaching. Steps 4 and 5 are related to a teacher's post instructional roles. In step 4 teachers were asked to allow students to move with their own pace and in step 5 teachers were asked to give 'remedial exercises' to the slow learners.

Briefly stated the five steps correspond to the following functions.

Step 1 - Pre-instructional functions.

Step 2 - Instructional function - teaching.

Step 3 - Instructional function - integrating PLM.

Step 4 - Instructional function - branching students into two ability groups.

Step 5 - Post-instructional function - Evaluation, Feedback, and Remedial exercises.

A teacher's guide contains some material written within inverted commas and some written without inverted commas. The material which is put within inverted commas is to be echoed exactly by the teachers. The material without inverted commas is for programming the behaviour of the teacher both inside and outside the classroom.

ii) The Content notes

Contents notes were developed on the topics which the teachers were expected to teach. Content notes on each of the following topics were developed.

1. Question patterns - Inversion type.
2. Question patterns 'Do' type.
3. Contractions.
4. Use of apostrophe in possessives.
5. Change of narration - when the reporting verb is in present tense.
6. Change of narration --when the reporting verb in in past tense.

Content notes contained all the relevant material, on the concerned topics. They also contained some enrichment material.

Relevant grammar books were consulted before developing content-notes. The material in the content notes was presented in a non-programmed manner.

iii) The Programmed Learning material

Seven sets of programmed learning material (PLM) were developed by the investigator. Pertinent issues (Kapadia ,1971; Misra 1970; Mullick and Dewal,1971; Dewal,1971) relevant to programmed development were kept in mind.

The investigator followed the following steps.

1. Target behaviours for each topic were specified.
2. A tentative flow chart on each topic was prepared.
3. A criterion test for each programme was developed.
4. Teaching and Testing frames were developed.
5. The first draft of the programme was individually tried out.
6. Necessary revisions were made.

No attempt was made to specify initial behaviours. It was decided that the PLM would be administered to the whole class and not to a popiation selected on the basis of initial behaviours. Hence no attempt was made to assess initial behaviours.

Similarly, no attempt was made to tryout the programme on a group of students. The programmes were tried out on individual students only. Necessary changes and revisions in the

light of individual tryout were made in the first draft. Finally the programmes were edited by the senior soecialist of Programmed learning of the State Institute of Education, Rajasthan, Udaipur.

1 The investigator is avoiding the mention of the details of how the programmes were produced. Developing a programme is itself a system (Kaufman, 1964) and it needs quite some space to explain and elaborate the procedure of pregramme production. Detailed discussions about programme development is available in Taber, Glaser and Schaefer (1965), Morkle (1964), Pipe (1966), Mager (1962), Lysaught and Williams (1962), Fry (1963), Krishnamurti and Rao (1969), Shah (1969), and Gilbert (1962) were analysed and made use of while developing these programmes.

iv) Remedial exercises

Remedial exercises were developed in a non-programmed manner. Remedial exercises contain both bread generalisations and exercises for practice. They were developed for each topic.

4. Allocating Functions

A typical instructional situation, has three compoents, students, teachers and textbooks. Each has specific roles to play. The student, more often than not, is a passive listener. The teacher is the presenter of information and the textbook is a catalogue of information seldom designed to teach (Brooks, 1964;

Dewal and Mahapatra 1970, Glaser, Homme and Evena, 1960).

Programmed teaching strategy puts these elements in a new key and endeavours to restructure the functions of these elements. It develops, what this investigator has called, the men-material system.

The term men-material system has been coined keeping in background the term men-machine system. In the developed countries classroom instruction is modelled on men-machine interaction. Men and machines interact to achieve specified goals. In men-material system, on the otherhand, men (students and teachers) interact with materials to achieve the specified goals. In the pgogrammed teaching strategy students and teachers are made to interact with programmed material, remedial exercises, teacher's guide and content notes.

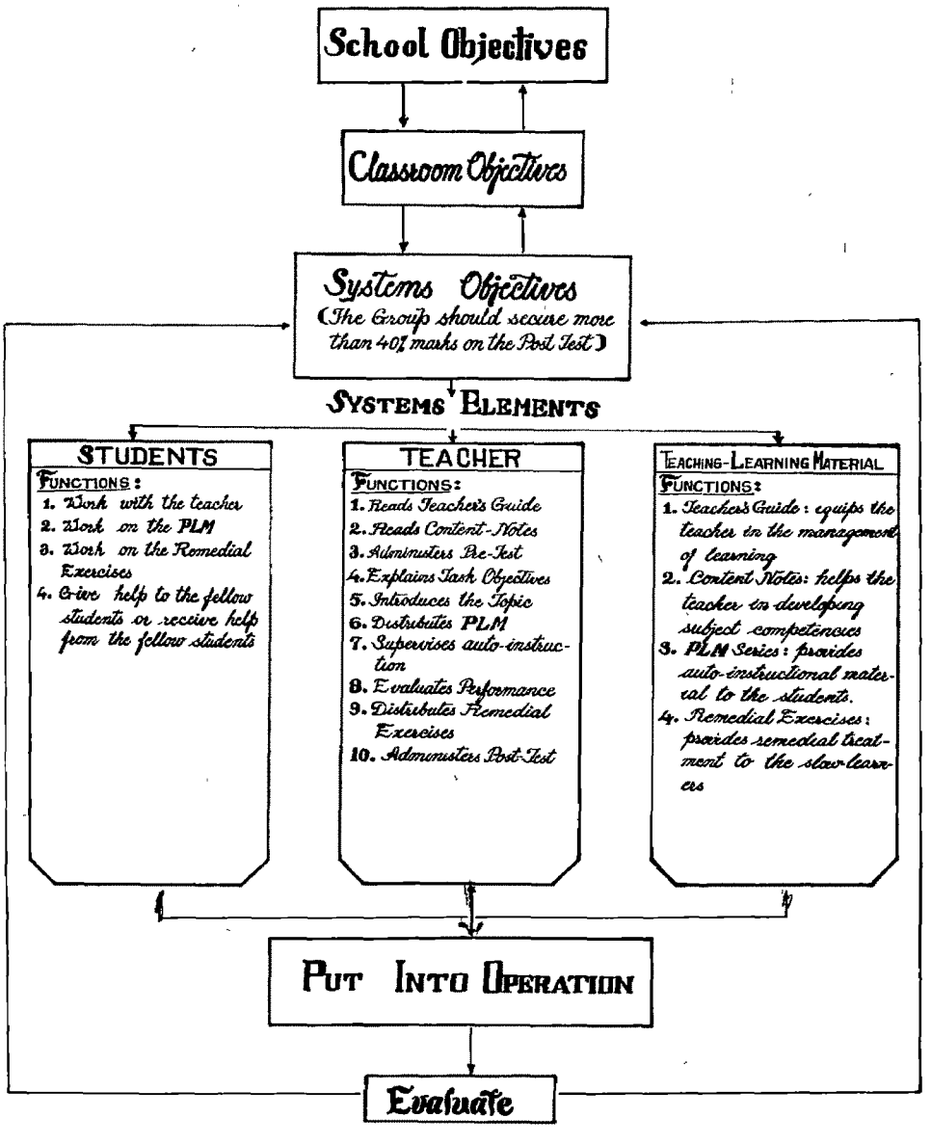
Flow chart 9 shows three main elements, viz., students, the teacher and the teaching-learning material. The function of each element is explained under it.

(1) Students

Instead of remaining passive listeners or merely interacting with the teacher or the textbook, students were expected to

(a) work with the teacher,
(b) work on the programmes,
(c) work on the remedial exercises, and
(d) give help or to receive help from their fellow students.

Flow-Chart showing objectives, elements & The Functions of the System



(2) The Teacher

The teacher didn't function only a presenter of information. On the other hand he was also a learner who would enrich his knowledge in content and methodology. The functions of the teacher under programmed teaching strategy were

(a) to read the teacher's guide,
(b) to read the content notes,
(c) to administer pre-test,
(d) to explain task objectives,
(e) to introduce the topic,
(f) to distribute the PLM,
(g) to supervise auto-instruction,
(h) to evaluate performance,
(i) to distribute remedial exercises, and
(j) to administer the post test.

(3) The teaching learning material

Four different teaching learning materials formed this element of the programmed teaching strategy. Each material performed different functions.

(i) The teacher's guide

They equipped the teacher in the science of the management of learning. They also provided a pre-design of instruction.

(ii) Content notes

They helped teachers in developing their content competence.

(iii) Programmed learning material

They provided auto-instructional material to students. They also helped in reducing teachers' work load.

They undertook some of the instructional function from the teacher. They also relieved teachers from the drudgery of 'correction'.

(iv) Remedial exercises

They provided additional exercises to slow learners. They also helped teachers in individualising instruction.

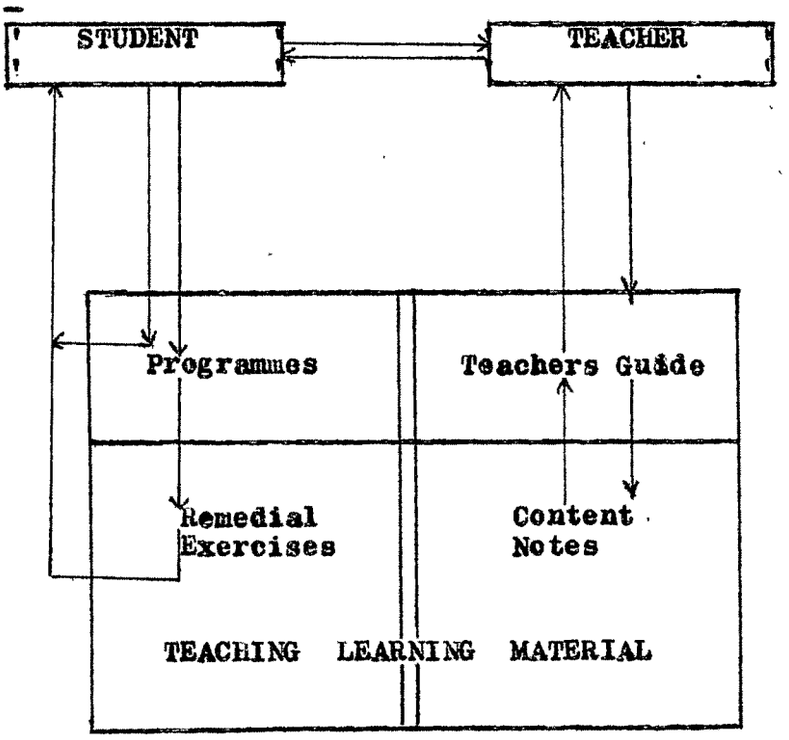
5 Interaction of Elements (Operation)

The next stage of programmed teaching strategy was to make the different elements operate and interact with each other.

Mostly classroom interaction is based on the concept of teacher-leanner interaction (Baron, 1969). But in multi media and men machine system, new modes of interactions are made between learners and machines. In this study men (teachers and students) not only interacted with one another but they also interacted with the material. Programmed teaching was synergistic effect of all.

The flow chart No. 10 depicts the pattern of interaction between students, the teacher and the material. A teacher interacted both with students and with the teacher's guide, and content notes. Similarly students interacted with teachers as well as with programmed material and remedial exercises.

PATTERN OF INTERACTION
AMONG
PROGRAMMED TEACHING ELEMENTS



Flow Chart 10

1 Having designed the programmed teaching strategy and having developed the required material, the investigator implemented the strategy in field conditions.

The details about the implementation phase are reported in the next chapter.
