CHAPTER I

INTRODUCTION

It dates back to a time untraced in the history of human civilization when the practice of formal education was institutionalized and accepted to constitute the major social organ for educating the younger generation of the society. Perhaps, right since the establishment of such formal educational institutions, or even from a date earlier to it, educational thinkers and practitioners have been persistently proposing and adopting new approaches and techniques of imparting education. The central interest of all these attempts has been the enhancement of learning on the part of the students. However, more scientific attempts to understand learning began with the study of learning as a psychological phenomenon. One would expect that psychologists through their scientific experimentation must have provided the practitioner with useful practical tips for understanding and improving learning. But, unfortunately, till nineteenfifties, most of the psychologists remained on a narrow academic plane conducting experiments either with animals or human beings in controlled laboratory conditions which could be of little import to the practitioner. They could at the most put forward some theoretical models of human learning and

some generalizations which could be more rightly called postulates than laws of learning although they are often so referred to in the literature. The first psychologist to offer a practical paradigm of human learning based on psychological principles was B.F. Skinner. Based on his operant conditioning theory of learning, Skinner developed a technique of auto-instruction which is called 'Programmed Learning' or 'Programmed Instruction'. This is not, however, to belittle the importance of contributions made by other psychologists in the field of learning. For instance, the prodigious vitality of the pioneering efforts made by E.L. Thorndike to understand the learning process is yet unparalleled. In fact, even Skinner owes several of his principles of learning to the laws of learning stated by Thorndike; the principles of reinforcement and shaping given by Skinner have their roots essentially in the laws of effect and associative shifting stated by Thorndike. Also, it should not be understood that Skinner has presented an unquestionably perfect instructional model in his 'programmed learning'. Programmed learning has been severely attacked both as to its theoretical basis and as to the practical principles of programme construction. According to Skinner the principles of programmed learning constitute direct application of operant conditioning strategies derived from the facts observed in laboratory

experiments with infra-human beings. But, the possibility of such directness and neatness of flow from theory derived in laboratory conditions to practical situations of complex human learning has been questioned (Hilgard, 1969). It is argued that if a 'programme' works as instructional material it does not really mean that students have learnt through the operation of operant conditioning principles. Skinner's stand that knowledge of correct response while working on a programme acts as positive reinforcer in human learning has been refuted (Annett, 1964). Researches have demonstrated that overt responding is not all that essential for learning to take place (Cumming and Goldstein, 1962; Goldbeck and Campbell, 1962; Hughes, 1961; Silverman and Alter, 1960; Stolurow and Walker, 1962; Shah, 1971), and minimal error on programme frames does not guarantee learning at all (Markle, 1973). However, inspite of all the criticisms levelled against it, as Annett (1972) has pointed out, the sort of research which attempts to confirm or disconfirm the Skinnerian position has been virtually fruitless. The results have provided neither proof nor disproof of the central feature of Skinner's work - the concept of reinforcement. The vitality of Skinner's approach to human learning lies essentially in its simplicity. Those who try to adopt his approach in practice find that his

ideas are simple to apply and work well enough (Mckeachie, 1974). Also, as has been pointed out by Glaser (1969), the specific programmed devices and materials in present use constitute initial application of a grawing underlying technology, and it is to be kept in mind that the basic concept of programmed instruction (irrespective of its psychological bases) would continue to have very broad implications for further educational research and practice.

Whether Skinner's contribution is applauded or decried, it is a fact established beyond doubt that programmed learning material developed on the lines stipulated by Skinner works well as auto-instructional material. As such, use of programmed learning material has become a part of the instructional programmes at all stages of education in several parts of the world. Of course, if one goes in search of instructional programmes wherein programmed learning as envisaged originally by Skinner is the sole technique of instruction employed, he may not get much evidence to support this statement. On the other hand, programmed learning has made a place for itself in the instructional process in atleast two ways. First, many of the instructional systems and strategies in current use such as Individually Prescribed Instruction, Personalised System of Instruction (Keller Plan),

Instructional Modules, Multimedia Packages of Instruction, Feedback Classrooms and Computer Assisted Instruction, invariably include programmed instruction as a major component in them. Secondly, most of the instructional systems and strategies, in their development and utilisation, adopt such procedures as specification of instructional objectives in behavioural terms, analysis of tasks involved, field testing and revision, arrangement for inbuilt feedback to learners, and criterion referenced testing all of which have been originally prescribed as essential features of the developmental process of any programmed learning material and its basic structure. Educationists ought to gratefully acknowledge the programmed learning movement (if not Skinner) for introducing the 'systems approach' in developing and organising instructional strategies.

However, despite its proven worth as an effective instructional technique, programmed learning is yet to enter the classrooms of India. Perhaps, the major reason as to why programmed learning has not become an accepted instructional technique in our schools and colleges is the lack of properly developed programmed learning material. Indigenously developed programmes on school and college subjects are very small in number. And, even these

programmes are not suitable for use in regular instructional work as they cover only selected portions of the prescribed course; it is really hard to find any programme written for a complete course at school or college level so that it can be directly used by the teacher for instructional purposes. Moreover, researches in India on the use of programmed learning material have failed to develop the necessary conviction among authorities regarding the utility of programmed learning materials. This has been mainly because experiments with programmed learning material have mostly been conducted for short lengths of time, that too, in contrived conditions. Consequently, the results do not help develop any practical strategy for adopting the technique on a large scale in the conditions that naturally prevail in our schools and colleges. In the light of the above facts regarding the status of programmed learning in India, it is needless to emphasise the necessity of carrying out researches leading to the development of valid programmed material which can be used on a large scale as a part of regular instructional work. The present study is essentially an attempt to develop such a programme for B.Ed. students. The problem may be more specifically stated as "DEVELOPMENT OF A PROGRAMMED TEXT ON EDUCATIONAL EVALUATION AND EXPERIMENTALLY STUDYING ITS EFFECTIVENESS AS INSTRUCTIONAL MATERIAL FOR B.Ed. STUDENTS".

The problem as stated above refers to only two aspects of the study, namely, development of the programmed text and its experimental validation. However, an attempt has also been made to study the attitude of students towards programmed learning, and to study the relationship between achievement through programmed learning material and certain student characteristics. The four aspects of the study may be specified as under :

1. Development of the programmed text.
2. Experimental validation of the programme.
3. Study of attitude of students towards programmed learning.
4. Study of achievement through programmed learning material in relation to certain student characteristics.

Objectives of the Study

(1) To develop a programmed text for the course, 'Educational Testing and Techniques of Evaluation', as specified in the B.Ed. syllabus of the M.S. University of Baroda.

(2) To study the effectiveness of the programme in terms of the performance of students on criterion tests.

(3) To experimentally validate the programme by comparing the achievement of students learning through the programme with that of a matched group of students learning through lectures.

(4) To prepare the final form of the programme based on the results of the validation experiment.

(5) To develop a scale for measuring the attitude of students towards programmed learning employing Thurstone's method of scaling.

(6) To study the attitude of students towards programmed learning as a method of instruction.

(7) To study the relationship between achievement through programmed learning and:

  (a) attitude towards programmed learning,

  (b) intelligence,

  (c) academic motivation,

  (d) English language reading comprehension.

(8) To study the relationship between attitude towards programmed learning and:

(a) intelligence,

(b) academic motivation.

(9) To compare the achivement of students with:

(a) high intelligence and low intelligence.

(b) high academic motivation and low academic motivation.

(c) high reading comprehension ability and low reading comprehension ability.

Details regarding the sample chosen, methodology adopted, results obtained and discussion of the results in respect of the different aspects of the study would be presented separately under four different chapters. A brief description of the organisation of contents in the forthcoming chapters of the thesis has been given in the following.

Organisation of the thesis

Chapter II deals with the first aspect of the study, viz., Development of the Programmed Text. The chapter begins with an introductory note about the development and use of programmed learning material in

India since 1963. This is followed by presentation of details regarding the main features of the developmental process such as specification of terminal behaviours, criterion tests, task analysis, target population, etc., as followed in developing the Programmed Text. Also, description of certain technical aspects of the Programmed Text such as style, format, response mode, and types of frames has been presented. The last section of the chapter gives details about the try-out study conducted to determine the effectiveness of the Programmed Text.

Chapter III relates to the Experimental Validation of the Programmed Text which has been carried out to study the effectiveness of the Programmed Text against an external criterion. After an introductory note bringing out the nature of evaluation strategies adopted in determining the effectiveness of a programme, the chapter has been divided into three sections. The first section presents a review of some of the studies conducted to compare the effectiveness of programmed learning technique with that of the 'traditional' technique of teaching. A brief discussion of the nature of these studies, and the validity of the conclusions drawn through them have also been presented. The second section entitled 'The Validation Experiment' gives details regarding the

experiment conducted to study the effectiveness of the Programmed Text developed under the present investigation in comparison with that of 'lecture' method. The last section contains suggestions about a possible practical strategy for utilisation of the Programmed Text in regular instructional work.

Chapter IV relates to the study of attitude towards programmed learning. First section of the chapter gives a brief review of some researches conducted to study the attitude of students towards programmed learning. The second section presents details regarding the attitude scale developed, under the present study, to measure the attitude of students towards programmed learning as a method of instruction. The third section deals with the study conducted, as a part of the present investigation, to determine the attitude of students towards programmed learning as a method of instruction.

Chapter V deals with the study of achievement through programmed instruction in relation to certain student characteristics. The chapter begins with a few remarks about study of individual differences in academic achievement. This is followed by the presentation of operational definitions of the different variables

involved in the study, alongwith which a brief description of the tools used to measure these variables has also been presented. The next section, discusses the nature of relationships between the different variables under study, as indicated by previous researches in this area. The last section of the chapter gives the findings of the present study in this regard and their discussion.

Chapter VI presents a summary of the findings and conclusions related to the different aspects of the study.

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