INTRODUCTION

CHAPTER 1

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Teaching as conventionally understood, is the art of disseminating information to the learners in a classroom. In the present times, teaching is looked upon more as a science rather than an art and education has been recognised as the tool for bringing in changes in an orderly manner. In this process, the concept of education has changed. It is no more confined to the formal structures and the institutions, but has advanced further to the "Distance Education System".

Education brings in the power of adaptation to an ever-changing social environment. It refers to any act or experience that has a formative effect on the personality of an individual, and is the process by which and through which experiences of knowledge, skills and attitudes are transmitted to the members of the community.

The present era is passing through a period of silent revolution in the field of education. Knowledge grows and accumulates at a rapid pace. The exponential rate at which new knowledge is generated makes the process of education complex. The new developments in science and technology of the current society also create demands for a solution to our education problems. In these circumstances "education explosion" is needed, for which technology or automation is the only solution.

1.1 Role of Educational Technology

Technology is a Science of techniques and methods of doing or getting things done, related to any art, science or to a particular profession. Accordingly Educational Technology can be conceived as a science of techniques and methods by which educational goals can be achieved.

Educational Technology is concerned with the efforts to provide appropriately designed learning situations which bring to bear the best means of instruction. It is the sum total of all educational facilities, media, methods and techniques for optimizing learning, and is a persistent and complex endeavor of bringing pupils,teachers, and technical means together in an effective way. This concept of Educational Technology has potentialities to make education effective and mass-based and bring in desirable functional changes in the structure of education.

Underlying all developments in higher education are societal changes, continuous, continuing and accelerating. New demands have been made and new uses found for education. New problems have arisen or old problems have taken new forms and new significance. Home economics, along with all higher education is confronted with the challenge and is highly concerned in the matter of integration of the areas and domains of knowledge and organization of learning experiences to attain the ends of education (37).

The need for radical changes with a view to keeping up with the ever-increasing volume and variety of knowledge has been recognised as an inevitable phenomenon in the changing process of higher education in India. The traditional system of collegiate teaching by the lecture method cannot meet the new demands of education. The teaching process has to become a student centered activity where a teacher serves as a councellor, guide and a catalytic agent at his best (49).

Technology provides the necessary answer to the problems in education and embraces every possible means by which information can be presented. Educational Technology is as wide as education itself. It is concerned with the design and evaluation of curricula and learning experiences and with the problems of implementing and renovating them. It is a rational, problem solving approach to education, a way of thinking systematically about teaching and learning .

The term 'Educational Technology' is very confusing for most people. To some, it is solely associated with the technical equipment and media of education such as over-head projectors, televisions, slide-tape programmes, etc. Others take the view that educational technology involves a clinical, systematic analysis of the entire teaching learning process in an attempt to maximize its effectiveness.

In short, educational technology, as understood today, is concerned with providing appropriately designed learning situations which brings the best means of instruction keeping

in view the objectives of teaching. The means of instruction implied may involve modification of learner's environment through techniques of presentation, arrangement of learning activities and organization of the social and physical surroundings.

The principal role of educational technology according to Percival and Ellington (87) is to help improve the overall efficiency of the teaching-learning process. In education and training, improved efficiency can manifest itself in the following ways :

(a) increasing the quality of learning, or degree of mastery ;
(b) decreasing the time taken for learners to attain desired goals;
(c) increasing the capacity of teachers in terms of numbers of learners taught, without reducing the quality of learning ;
(d) reducing costs, without affecting quality.

Educational Technology makes necessary provision in the education system for all the new ideas and aims at making education more widely available and, improving the quality of existing education.

1.2 Programmed Instruction

'Teaching' is a broad, vague, term and 'instruction' is a purposeful, orderly, controlled sequencing of experiences

to reach a specified goal. All instructions involve teaching, but all teaching cannot be instruction (93).

Instruction has a significant role in human learning because most of the human learning is accomplished through instructions. Instructional design is concerned with application of skills and techniques for the requirements of education and training. Instructional technology means a network of techniques or devices employed to accomplish certain defined set of learning objectives. Instructional technology implies the application of psychological and scientific principles and knowledge to instruction for achieving the specific objectives of learning. The most important example is 'Programmed Instruction'. According to Sharma (102), 'Programmed Instruction' and 'Instructional Technology' can be used interchangeably.

Programmed Instruction represents a more rigorous attempt to develop a mastery over specified goals to secure 'insured' learning. It involves carefully specified and skillfully arranged learning experiences. They are self-instructional and self-corrective. Programmed instruction is a big step in the direction towards automation and individualisation of instruction. It is an application of the principles of behavioural science and technology in the field of education.

'A programmed material is a reproducible sequence of instructional events designed to produce a measurable and

consistent effect on the behaviour of each acceptable student'. This statement was made by Indian Association of Programmed Learning.

In order to achieve the set aims and objectives of education, it is necessary to select appropriate hardware or software to back-up the particular strategy that is adopted. In some cases, this may involve the use of highly sophisticated equipment such as video or computers; in others duplicated work-sheets may be all that are required.

The hardware or software selected for a particular strategy will also depend on the trend prevalent in the education system. The two major trends seen were towards 'mass' and 'individualized' instruction. The mass instructional technology was governed by machines and systems suitable for that purpose. These include the radio, television, video, and computers.

In opposition to, and after the mass communication phase, the next main area of activity in educational technology was centered on philosophy and techniques of individualized learning which led to the development of individualized programmed learning packages and to the production of complete systems of individualized instruction. These include the following on an ascending scale of sophistication :

(1) individualized reading papers,

(2) individual viewing and listening equipment for slides, film strips, motion pictures, recordings,

(3) language laboratories,

(4) specifically programmed printed materials such as scrambled textbooks, and

(5) true teaching machines of the Skinner or Pressey type containing carefully worked out verbal or pictorial programmes with various mechanical or electronic arrangements.

Programmed Instruction is often talked about and used by psychologists and educationists as a new method of teaching; but it is hardly new or revolutionary. Socrates was one of the early programmers who used to guide his followers to the acquisition of knowledge by conducting them conversationally along a path from one fact to another. The primary object in this method was inquiry. The subject-matter was broken down into very small cumulative steps. By forcing the active participation of the pupil, continuous feedback was provided (93).

Programmed Instruction provides an overall plan for an orderly presentation of the subject-matter in some particular manner, and aims at improving the teaching learning process. It sustains the motivational level of students and interests the learner in teaching because the desired behaviour of student is reinforced at each step. It utilizes the principles of reinforcement to make certain that learning actually does occur. The programme embraces both the factual

matter of the subject and the skills involved in learning patterns, using every aspect of reinforcement theory to lead a student to a full understanding of its material. Such self-instructional materials can be used as home study and may also be used by temporarily home - bound students who may keep up with assignments while unable to attend regularly scheduled classes.

Shah (101) states that in a developing country like India, much could be achieved with the existing resources if an attempt is made to produce programmes with minimum cost and maximum effectiveness. Research in this field would be justified only if it purports to strengthen such an attempt.

Programmed learning offers some hope to solve what otherwise appears to be insurmountable problems of education. Programmed Learning techniques have to be applied to special conditions prevailing in our country. It has immense possibilities in the direction of refining class-room instruction, encouraging self-instruction and providing reliable basis for audio-visual instruction and for correspondence courses.

Programmed Learning is not a solution to the shortage of capable teachers. The task of the teacher will become even more complex and vital as the students will proceed at their own rate.

During the development of any programme the role of the teacher, however varied, has been a critical one in determining the effectiveness of learning.

Programmed Learning demands the selection of concrete goals before the construction of a programme is undertaken. It charts the route to the ultimate goal through a series of intermediate stages and fashions complex subject matter by linkage of discrete, simple items. PL acquaints the student with only one item at a time and governs the response through consistent, immediate reinforcement of the learning it wishes to impart. It also closes the door to faulty information by denying reinforcement altogether, and then helps students to rectify their error through the medium of the programme itself.

Programmed Learning insists that each single point be understood before the student moves along to the next one, limiting itself at each step to that material for which the student has been prepared. If offers a mechanism for coping effectively with the range of individed differences in ability among students. It enables the students to work privately and as a consequence, recognise the fruits of their own labour.

According to Misra (72) Programmed Learning has been successfully used in modifying all types of behaviours including manual skills. He further opines that if was take stock of the entering behaviour of the student and the actual

terminal behaviour which we expect him to come out with as a result of programmed instruction, skill learning can be handled much better. Also the sequence in which the movements are to be executed are important in itself. One of the first functions for teaching skills is to analyse the task which is to be taught. "Task analysis" can begin with observing a successful performer, or a logical arrangement provided by a subject-matter expert can also serve the purpose.

According to Reich (91), Clothing and Textiles, particularly clothing construction seems well suited to a self-instructional programme where the programme is written for understanding, concept formation, motor skills and transfer of basic learning rather than strictly for recall of information.

Findings of a study conducted by Schank (95) reveal that women can learn to sew using a self-instructional programme unsupervised in their houses if they read at the eighth grade level if they are adequately motivated. Similar results were found by Bickford (11) and she concluded that the systematic application of motivational principles to the design of printed instruction can improve student achievement and motivation.

At the same time, White (120) studied the effectiveness of self-instructional sewing programme when used with disadvantaged adults and found that all the participants of

her study had a positive attitude towards programmed instruction and that instructional materials can also be successfully used by disadvantaged adults for mastering a skill in sewing.

1.3 Printed Materials

The impact of electronic media on the society has been widely discussed during recent years. There is little doubt that many changes in our thinking and life styles have been a result of electronic media and surely there will be many other changes in the future. Inspite of the impact, higher education institutions in the developing countries like India, however, cannot go for the highly sophisticated instructional media because of heavy costs involved in buying and maintaining and also inadequate development and availability of these media.

The impact created by electronic media is very great, but is small in comparison to the changes brought about by the mass distribution of printed materials. It seems that printed material will always have an important role in training and education and it is unlikely that they will ever be eliminated as a vehicle of instruction. Print in its many forms, can be sent to remote locations and can be used by individuals on a self-instruction bases. The advantages of print seem to expand as technology continues to evolve means of producing attractive publications. The trends in education seem to indicate that in the furure, it is likely

that printed and other communication media will share the responsibilities for supplying contents and directions for student learning.

Since, for the next few decades at least, the book will continue to be the most widely used instructional device, it makes sense to assume it will be possible to make major improvements in the book as a learning tool and to invest extensively in the search for improvements.

1.4 Programmed Instruction in Home Science

Home Science education is more an applied discipline, which makes its teaching a complex process.

The nature of knowledge in home science varies from course to course and level to level. It aims at the development the cognitive as well as affective domains and at the same time of helps to develop some psycho-motor skills such as skills in constructing garments.

Home Science, like all other higher education, has its share of problems and is confronted with the challenge of building an effective programme in the face of change. Time is one of the factors that is multiplying the problems because there is so much to be taught and learned in a short and limited time span. Obviously, it is impossible to pack more into already packed programmes. The need is to provide a setting for a rich and satisfying higher education with needed depth in subject matter specialization.

Clothing and Textiles shares in the problems of higher education. The subject matter of Clothing and Textiles lies in the congnitive, affective and psycho-motor domains of learning. Developments in technology and new products demand a change in teaching-learning process to make it more effective.

Parlikar from her research, has found that developing Programmed Learning materials in Home Science is feasible and its use in promoting home science education is possible. It is found to be suitable for use by adolescent girls both for self-study as well as an aid.

According to Reich (91) the individualization and the self pacing features of programmed instruction have proven to be highly effective in enabling the students to master a large amount of information and skill in a relatively short span. She further emphasizes that clothing and textiles especially clothing construction, seems especially suited to a self-instructional programme when the programme is written for understanding, concept formation, motor skills and transfer of basic learning rather than strictly for recall of information. Many techniques and facts are to be learnt in clothing construction, but the real evidence of useful learning involves the higher objectives of comprehension and application principles.

Programmed Instruction has been successfully used in promoting home economics education in U.S.A. Researches on

programmed materials have been conducted to establish its suitability for self-instruction material as well as an aid. They have also been conducted to establish its effectiveness, when compared to the conventional methods of teaching.

1.5 Justification

Methods of teaching have a direct relation to the purpose of teaching. The availability of any amount of equipment in an institution will not have the desired impact on the students unless the right method is adopted for teaching. Effective method of teaching can inculcate among the students desirable values and proper attitudes towards habits of work, can train the students in techniques of self-study, can develop capacity for clear thinking and expression.

In colleges and universities the most popular method of teaching today is lecture method. The popularity enjoyed by this method is not because of its effectiveness but its ease of utilization and historicity. It is true lectures are fruitful if they are well planned and effectively delivered, but the lecture method fails to take care of individual differences in learning capacities of students (52).

Lectures which are mainly intended to provide basic knowledge to the students can be effectively replaced by suitable self-instructional techniques which the learners can also learn outside the class hours. Use of such self-instructional techniques becomes significant in the light of

the personality development of the students at higher education level (69).

In choosing a technique of teaching, a teacher must look to the needs of her students and select a technique that will develop the students' ability to think. Spitze (107) feels that people think only when they have a problem to solve and the best results come from problems which start from the students curiosity, where he/she asks the question and seeks the answer to it. Psychologists have also stated that students learn best when they use their senses in acquiring knowledge. Instructional materials incorporating self-instructional techniques are the best solution where students can work on their own, achiving success at their own rate.

Development of instructional materials at higer education level will go a long way towards systematisation of instruction in different courses. This would not only consider the instructional objectives at that level but also takes into account certain characteristics related to the learners, resources, subject matter, etc. .

Variations in financial, man-power and natural resources, available to an educational institute forms an important criterion in deciding suitable instructional methods and media. In institutions where the physical facilities are very meagre, use of sophisticated hardwares may not be feasible. Similarly, in institutions where the

trained or experianced man-power resources are limited, self instructional materials can be made use of, by which students would be able to learn on their own.

Since self instructional materials have a number of advantages over the other methods of teaching and researchers have proved that students have learnt effectively from them, the investigator decided to develop instructional materials for selected aspects of Children's Clothing course and study its effectiveness by experimenting in the classroom. This includes a theory section dealing with cognitive ability and a practical section dealing with the psychomotar ability or skill development in clothing construction.

"Children's Clothing" is a course offered by the Home Science curriculum to the 2nd year B.Sc. (Home Sc.) students. It is the second course in clothing construction after they learn the basic techniques of clothing construction in the introductory course in the first year class. This course provides knowledge about suitable clothing for children, including selection, buying and sewing of garments for children. It gives an opportunity to the students to apply their knowledge of basic techniques and develop skill in sewing, and trains them for other construction courses which require stitching of garments for adolescents and adults.

Clothing plays an important role in the life of a child because clothes help in making childhood a delightful period and contributes to a great extent in the personality

development of the child.

In the life of a child, pre-school age is the most active period when new muscular skills are acquired and the child develops from an almost helpless baby into a relatively independent school boy/girl. These years are the formative years for later development and so attention has to be given to the physical, social, emotional, mental, moral and aesthetic development of pre-school children.

For a child to be well dressed and socially well-adjusted, it is important that his/her clothes are well constructed and do not bind or constrict any part of his body. Construction of garments is a technical accomplishment requiring knowledge of construction and skill in constructing, so that the workmanship is of an acceptable standard.

The workmanship on children's clothes is especially important and should be of such a quality as to withstand frequent launderings and hard wear. Seams should be soft to prevent irritation and finished well so that they do not pull out and ravel with constant wear and washing.

Cheap buttons and poorly made buttonholes, poor stitching and inadequate seam allowance, snaps, hooks and buttons not securely fastened, and poorly constructed openings are the biggest problems faced by mothers in ready to wear garments. In order to stitch garments for children

that fulfill the stated requirements, skill development is necessary which includes acquisition of knowledge and implementing the same, requiring a lot of patience on the part of the learner.

Skill development is a complicated process for which a need was felt for genuine changes in the teaching-learning process so that learners could learn according to their individual capabilities without having to bother to keeping up with the class.

There is a widespread concern about the deterioration and irrelevance of the education sometimes. The Ministry of Education has stated in the policy perspective, 1985, ".....It cannot be improved by marginal changes. The system has to be resurrected by fundamental changes in priorities, contents, methodologies of teaching and learning systems of evaluation and management structures" (46).

It is worthwhile remembering at this time the warning given by the Education Commission, 1964-66. It has remarked that - "An educational system which does not continually renovate itslef becomes out of date and hampers progress, because it tends to create a lag between its operative purposes and standards and the new imperatives of development both in quality and quantity" (15).

Keeping the above justifications in mind, it was felt that development of instructional materials on selected aspects of Children's Clothing course would enable the second

year B.Sc (Home Science) students to learn about children's clothing at their own speed. They could learn things at a rate challenging to their individual capabilities.

1.6 Statement of the Problem

The problem selected for the present study has been stated below.

"Development and evaluation of a set of instructional material for selected aspects of Children's Clothing course".

From the children's clothing course the topic selected for the programme was "Clothing for the pre-school child". Under this topic, the theoretical aspect included the knowledge on suitable clothing for pre-school children, selection and buying of fabrics/garments, and their care.

The practical aspect included the stitching of a garment for a pre-school girl child.

1.7 Objectives

This study was planned with the following objectives in mind.

1. To develop instructional material for selected aspects of "Children's Clothing" course which can be used to ensure that students will master the knowledge and skills involved.

2. To appraise the utility of the instructional material for teaching children's clothing by conducting experiments with two groups of students - one taught by the instructional material and the other taught by the conventional method of teaching.

3. To determine the differences in the achievement level of students taught by the instructional material and students taught by the conventional method.

4. To study the difference in the achievement level of students taught by the two methods according to their

   (a) Intelligence,
   (b) grades in English course in the previous semester,
   (c) grades in Clothing and Textiles course in the previous semester.

5. To make the students realize the quality of their workmanship through self-evaluation.

6. To study the reaction of students towards self-instructional materials.

1.8 Null Hypotheses

1. There will be no significant difference in the achievement level of the students taught by the instructional material and students taught by the conventional method.

2. There will be no significant difference in the achievement level in the IRT (immediate retention test) and the DRT (delayed retention test) of students taught by the two methods.

3. There will be no significant difference in the achievement level in the IRT and DRT of students taught by the two methods according to their -

   (a) level of intelligence

   (b) grades in English course in the previous semester.

   (c) grades in Clothing & Textile course in the previous semester.

   (d) Their pre-test scores.

4. There will be no significant difference in the reaction of students in relation to their achievement in the IRT.

1.8 Delimitations of the Study

1. The study was limited to the second year B.Sc. (Home Science) students registered in the year 1989 in the Faculty of Home Science, Assam Agricultural University, Jorhat, Assam.

2. The experiment was limited to the teaching of selected aspects of "Children's Clothing" course.

3. The practical aspect was limited to one garment style only.