CHAPTER 4 **DEVELOPMENT OF THE MULIT-MEDIA PACKAGE** PAGE

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DEVELOPMENT OF THE MULTI-MEDIA PACKAGE

4.0 INTRODUCTION

The previous chapter, described the details of the methods and models of approaches to instruction with particular reference to skill learning, ranging from the socratic teaching method of the self-learning, multi-media approach with built in feedback remedy and high participation by learners for the skill and knowledge levels. This chapter presents methodological details in respect of the first objective of the investigation which reads as follows:

> "To develop a multi-media package to teach a course on Audio Visual Education for the Instructor training programme at the Central Training Institute for Instructors, Madras."

As this course forms part of the total instructor training programme, the broad objectives of the instructor training which has relevance to the teaching of this course are listed below:

1 To provide basic information about teaching methods in order to provide teaching skills to the instructors.

2 To provide opportunities to upgrade the skill and knowledge in the discipline of the instructor.

3 To develop certain skills in enabling the instructors to function as better instructors, more efficiently and effectively.

ANALYSIS

IDENTIFYING THE NEEDS AND GOALS
ANALYSING CONSTRAINTS AND RESOURCES
ORGANISING COURSE INTO MODULES AND UNITS

1

DESIGN

WRITE OBJECTIVES
ANALYSING OBJECTIVES
DESIGNING CRITERIAN TESTS
SEQUENCING INSTRUCTION
VALIDATING OBJECTIVES & SEQUENCING BY FACULTY
LISTING INSTRUCTIONAL EVENTS
SELECTING MODE
SELECTING MEDIA
INCORPORATING CONDITIONS OF LEARNING.

2

DEVELOPMENT

ADAPTED MODEL FOR INDIVIDUAL SKILL LEARNING
DEVELOPED SCHEDULES
DEVELOPED COURSE MATERIALS
DEVELOPED SUPPORTING MATERIALS
TRAINED STAFF MEMBERS
FIRST TRYOUT & REVISION

3

VALIDATION

VALIDATE PACKAGE IN TERMS OF LEARNER ACHIEVEMENT, TIME, COST & RESOURCES

5

FIELD TRIAL

IMPLEMENTING INSTRUCTION
MONITORING ACTIVITIES
CONDUCTING FIELD TESTS
ASSESSING PERFORMANCE
MAKING FINAL REVISION
ANALYSING THE COST.

4

DIFFUSION

REVIEWING THE ANALYSIS OF CONSTRAINTS & RESOURCES.

REVIEWING THE CHARACTERISTICS OF TOTAL PLANNING

ANALYSING DISCREPANCIES BETWEEN PAST & PRESENT PRACTICES

IDENTIFYING INTERACTING FACTORS IN THE IMPLEMENTATION

REMOVE CONSTRAINTS AND IMPLEMENT DIFFUSION

6

FIG. 4.0 THE PROCESS OF DESIGN OF THE MULTI-MEDIA PACKAGE.

The process of design of the multi-media package is shown at fig.4.0.

4.1 Approach to course development

The term course can apply to three or four related lessons or sessions or to a whole certification programme lasting several years. Essentially it is considered here as a sequence of structured learning with a time interval between each session and the next. The course is a part of the training in Pedagogy, for a full year, this course itself, extends for one phase (2nd semester) of an academic years programme. It provides for a normal 4 hour per week programme for the semester. This will be an on campus self-instructional course, to teach knowledge and skills for the specific task of becoming an instructor, and improve his instructional skills. So far, no course has been taught by any of the Central Traaaining Institutes for Instructors using the multi-media concept, but some of the faculty members were exposed to situations prevailing in the United States, United Kingdon and Germany. Rowntree (1981) had stated that in the Open University (UK) all courses are developed by course teams, and such a team may consist of several academics experts in the relevant subject matter - together with media spcialists, a graphic designer, a course co-ordinator to liaise between the team and other areas and an educational technologist who acts as an adviser on pedagogical issues. The minimal team consists of one person, the teacher responsible for teaching the course and/or for preparing any necessary self-instructional materials (TAAD, 1980). He may additionally have one or more critical friends to whom, the developer can turn, when occasion demands for wise and dispassionate comments. This approach was adopted by the investigator while developing the course materials for this

course, which has taken more than three years. The investigator, being an instructional system approach and a pedagogy teacher, had the previous experience of conducting the classes for pedagogy and audio visual training at the Central Training Institute for Instructors, Kanpur from 1972 to 1976. The investigator had a working knowledge of the subject matter and the teaching/training methodology, and the initial version of the course was completely drafted by the investigator, and then reviewed by the faculty leader and a member of the instructional staff (Training Officer). Getting their comments and suggestions, revision of the contents, and certain other aspects of the strategy were done, and further discussion with them continued till the last course test on validation was over. In addition to these two members, the investigator had the good opportunity to discuss with 'critical friends' as Rowntree - 1981 suggested, from University of Madras, National Council of Educational Research and Training, State Council of Educational Research and Training, and M.S. University of Baroda. At each stage, discussions were encouraged between the instructor who was responsible for the classes, the faculty leader and the investigator in order to see that the course is run smoothly, and as per the experimental design. The investigator himself was present in all the starting and ending sessions of each module, and many of the discussion sessions, and the practical exercises sessions. On the other side of the spectrum, the investigator was working with the graphic designer, photographer, and technician to help the investigator produce the visual materials, sound recording, and comment on the drafts. Time schedules were fixed within the normal time schedule for the institute, and effort was made by the faculty leader to see that the schedule was kept going without disturbance. It is not out of place to mention that even the comments of some of the instructor trainees were obtained at various stages during the initial stage of development and before the final experi-

mental try-out. The experience gained by the investigator while teaching similar course students who are believed to be very similar was very useful, not only in making draft course outline, but later during discussions with the instructional staff members who were at the delivery system. The classification of objectives and the wetting of the criterion tests were done through experts from the NCERT and SCERT with whom the investigator had been conducting few seminars and workshops in this area at the Central Training Institute for Instructors, Madras. Thus, it is fair to say, that contents were influenced by the syllabus for the subject, methodology, and procedure were influenced, by the faculty members of the Training Methodology section of the Central Training Institute for Instructors, Madras, and few critical friends from NCERT, SCERT and instructors who had taken the course before. With this introduction, that described the synthesis of the final shaping of the course materials, and that the content of the course governed by the syllabus, followed for teaching the subject, and further that experience based approaches to selection of media was adopted in deciding the various components of the modules (Rowntree, 1981, in his book on Developing Courses for Students, has said, 'Intuitive approaches are relatively informal, unstructured, non-systematic. Nevertheless, they may be highly productive.') To sum up, the approaches followed are:

* Reviewing one's own knowledge of the proposed subject.
* Asking other faculty members and subject-matter experts.
* Analysing similar courses elsewhere.
* Reading textbooks aimed at learners at about the same level, as the intended course.
* Reading more advanced books and scholarly articles on the subject.

* Reading journals, reviewing films, newspaper and the like relating to the proposed subject matter.
* Discussing with the learners their existing conception of, and attitudes to, the key concepts of the subject matter.
* Choosing available self-instructional materials on the subject and adapting them whereever feasible.
* Thinking, and organising in an order the activities that learner need to engage in as part of the course.
* Considering how learner attainment on the course might most sensibly be assessed.
* Discussing with the examiners about the expectations of the learners in the teaching sessions for the final examination.
* Discussing with inspecting officers and other administrators, about their views and expectations of these trainees.

4.2 Review of present subject matter and methodology

A review was made in the CTIs, Kanpur and Madras about the method of teaching the course and this review revealed discrepancies in the achievement of students. By and large, there was no practice of asking the learners to do all the practical exercises and give them detailed instructions, as the subject was not subjected to an external examination from outside agency. It was also informed that the instructor trainees lacked motivation to learn the subject, and do practicals. Only a few chalk board exercises used to be done and few charts were being prepared. The theory taught was also not in a systematic manner, though every institute was covering the whole course theoretically. The general comment was that the time allotted in

teaching the course was in-sufficient, and the instructor trainees cannot get the required practice. A further analysis helped in defining the problem and finally the general aim of the proposed development of the course materials. This was refined after discussion with the faculty leader of the Training Methodology department of the Central Training Institute, Madras and it can be stated as under:

> "to evolve a strategy to develop a multi-media package and develop a multi-media package to teach a course on Audio Visual Education, for instructor trainees in the Central Training Institute, Madras."

4.3 Constraints in the system and choosing self-instructional materials

The instructional system was designed taking into consideration the present constraint in the instructional system in respect of resource available for implementing instruction for the course at the CTI. These constraints are:

a The strength of instructor trainees at each CTI is more than 100, and for teaching trainees Audio Visual Education/Instruction, there is only one vocational instructor, who will come sixth in hierarchy to the Principal, and hence neither he can command respect from either the instructor trainees to the extent desirable, or from other faculty, who are at a senior level to implement decisions, with respect to the application of the aids.

b Because of this situation, it was difficult to attract better talent, and instruction centered around the capacity of the faculty member to a great extent.

c The time allotted, was only 108 hours in the second phase or semester of the one year course, and this necessitated either reducing the course content, or finding extra hours for implementing the syllabus.

d In all the CTIs, which were, as explained in chapter I, there were enough equipment supplied by the International Labour Organisation or the U.S. Aid and mostly these remained as show pieces, rather than forming part of the instructional strategy.

e A good number of books were available in the libraries, but they were beyond the level of the learners and hence they could not make use of them.

f In all the CTIs, there were at least a few energetic faculty who had training in foreign countries, and they wanted to implement some of the methods used by them, but were themselves not capable of implementing them in their own discipline, due to various reasons. In fact the investigator himself, wanted to introduce many innovations ever since his return from the United States, in 1971, but was unable to effect major changes, except this particular project which is his own, and not an institutional project.

g Practical applications of the various innovations in the area of audio visual aids, is considered to be moreo important and necessary at the level of Instructors in the Industrial Training Institutes and Industrial Training Centres, though the 'why' and 'how' a thing should be done is nice to know, and no instructional materials were available for delivery at the Audio Visual Instructor's level.

h In a field like vocational training, as the input to the courses are from normal drop outs in colleges and higher secondary schools, it was necessary to provide desirable experiences to do his job well.

i Industries found it difficult to spare their instructional staff for long duration of training and yet they desired that training is necessary for them in this area. Hence to help them reduce the training time, modular pattern of self-learning materials with occasional contact programmes were considered not only desirable but necessary.

j Unfortunately the struggle to teach and learn the ever expanding body of subject-matter leaves little time for thinking about it. It was necessary for an average intelligent instructor to find time to update himself, and devote more time for individual instructors, when self-learning instructional materials are available.

4.4 Development of the Course Structure

Procedure for developing the course has been explained in chapter 4 and this has been used to construct the procedural and learning structure of the course, divide into different learning elements called units, under convenient self-learning modules.

Audio Visual Education or Instruction is taught in many Training Schools, Training Colleges, Colleges of Education and Universities. But they were all geared to meet the demands of a generalist, not at the level of vocational education or training. Therefore the structure of the subject was developed specifically for the vocational education and training programme around five major areas starting at the level of the link between the training methodology and proceeding to different areas, which could also be taken as separate instructional modules if necessary. At present, it has not been considered to delink the learning elements at the unit level from the whole module,

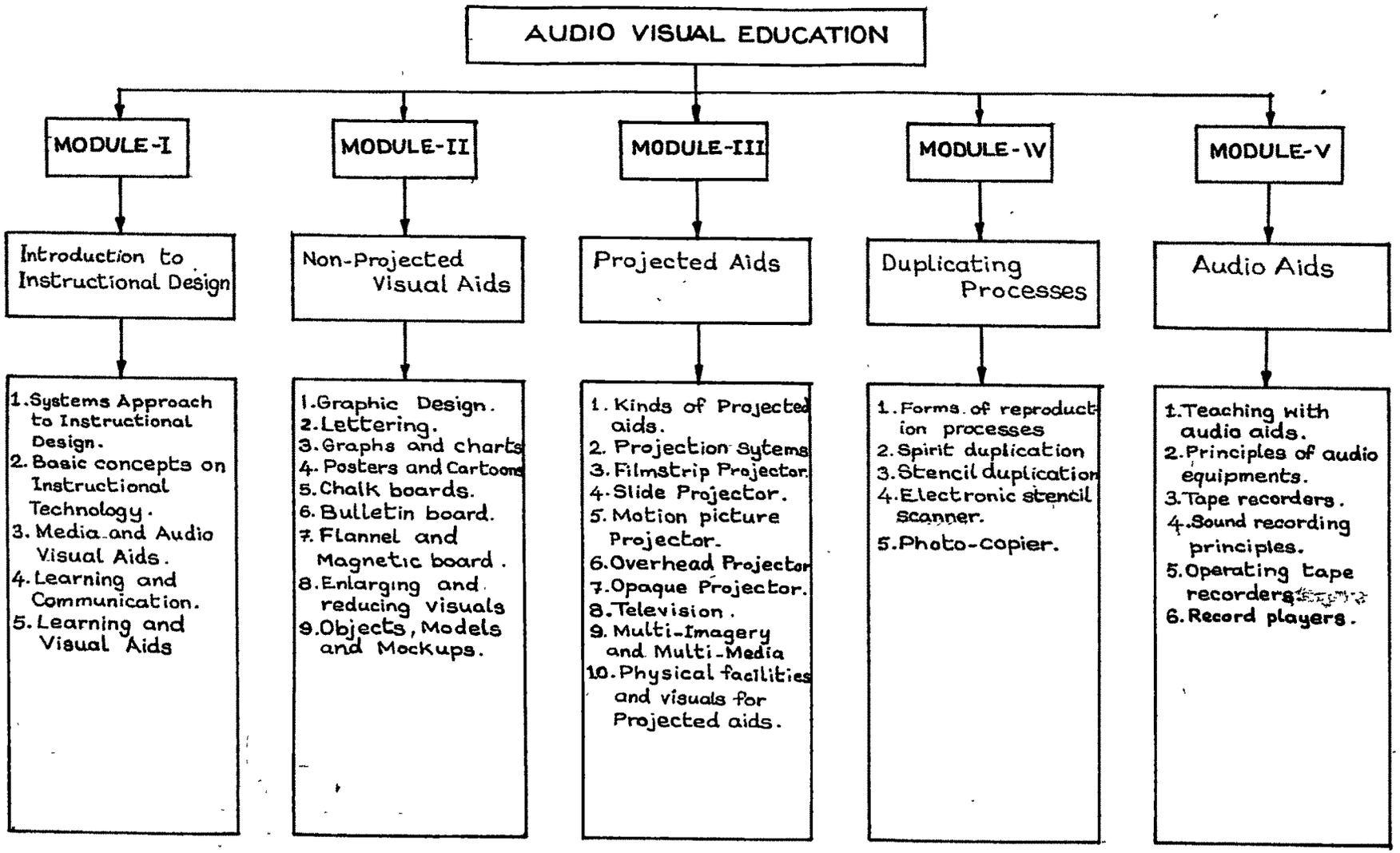


Chart No 4.1 Flow Chart showing the contents of course module-wise, divided in to 35 units. The flow chart shows details of each of the unit.

Krishnan

and continuity has been maintained within the module and between units, but different learning elements could be delinked at a later date if needs arise. The division of the subject into different modules and the units are shown in the Flowchart 4.1. This being an entirely new area of study for any prospective instructor, no pre-requisite knowledge on the subject was assumed and only general understanding and capacity to read and write in English which is the medium of instruction and therefore the previous knowledge was necessarily to be nil, so far as this subject is concerned.

4.5 Towards independent learning

Having learners learn to plan their own education is not the aim of this course. Students who are in the regular one year certification programme cannot exercise any choice as it stands today with the system of instructor training. Even at university level, not all students will have maturity to cope with the consequent responsibilities and complexities. Liam Hudson (1970) distinguishes between the two types of students: 'the sylbs' who are syllabus-bound, and the 'sylfs' who are syllabus-free. Though the context of Hudson's definition is different, probably at the Central Training Institute, there is a proposal to introduce modular short term courses to needy, especially the private agencies and industries. It is possible to utilise the modular pattern self-learning courses at the unit or learning element level, impart the skill and knowledge required for the particular element with the developed multi-media package. Moreover the self-learning materials developed will give facilities for some of the clients to study for themselves the aspects they require, and come to the Institute for contact programme. This will

bring to realistic viewpoint, the objectives. The learning elements have been designed with independent objectives, and criterion tests, which will facilitate the conversion of the element into independent individualised self-learning units.

4.6 Instructional Objectives

Considering the proficiency the instructor trainees should acquire through this course, for carrying out the instruction, and in consideration of the different learning elements included in each of the modules behavioural objectives were worked out.

The use of objectives is grounded in an assumption that the purpose of education and training is to help people change. They are to become different from what they were, developing their existing qualities and abilities and acquiring new ones. They are to change the way the instruction is designed. They must think, act and feel, according to the contemplated change in behaviour. They must become more knowledgeable, more skilful, more confident, more rational, more insightful, and more self-dependent. Such change orientation is normally hinted in the overview for the course. This is generally helpful, and will be expressed in terms of what the course will do. Overview is also an educational intent. Aims are expressed in terms of what the instructional developer or the teacher is planning to do, to the student. From the overview, the goals were worked for each of the modules and the course. The main course objectives were then specified for the complete course. The overview is short, and at a glance will provide the aim of the teacher, while the course objectives contain clues as to its content,

teaching learning methods, and a little more details of the area of the course. The Overview, main course objectives, goals and unit wise instructional objectives stated in behavioural terms are given in Volume VII. The goals and objectives, unitwise are given before the begining of each unit. Even today the focus placed by most of the faculty members is on the learning process and on the learning outcomes. In this investigation, the focus has been shifted from the learning process to the learning outcomes. This shift in focus clarifies the intent of the instruction and sets the stage for an evaluation of that instruction. However, the following guidelines were of prime importance while finalising the instructional objectives:

* based upon Bloom's cognitive domain taxonomy and NCERT approach.
* based upon learning element content (unit).
* appropriateness to the instructor training programme at the CTIs.
* adequacy for the development of concepts and application of concepts at performance level.
* attainability of the objectives by the learner within the time schedule.

4.7 Relating objectives to instruction

The list of instructional objectives usually contains learning outcomes that are considered essential for all learners to achieve, and others that allow for varying degrees of individual development. Learning outcomes that can be rather considered minimum essential are typically low-level outcomes that can be rather easily achieved by learners and that serve as pre-requisites to further learning in the area. The ability to understand, to apply, to interpret, and to think critically typically depend on an extended

period of development. Their complete attainment is not expected during the given course, nor it is possible to develop such attainments in the short span available to the instructor. All that can be expected is to define each objective in terms of those behavioural terms and outcomes that are appropriate to the learners' learning levels and that represent reasonable degrees of progress toward the objective. It is not possible to consider all objectives as essentials and strive for mastery on the part of all students. For example, it was conceived that in many of the units developed, a three stage approach in some, and a two stage approach in some. For example where advance expectations are there, a three stage approach was planned. For example in the case of Bulletin board and Flannel board presentation under module II and in the case of multi-imagery and multi-media under module III organising a multi-media lesson, a three stage approach was planned. The learners were asked to put in independent work of preparing a plan for the presentation all separately, and a group presentation was asked to be presented, where the combined effort of the learners all put together will enable a presentation to be made. Apart from the time factor involved in the individual preparations it is not possible for all low-level achievers to make such presentations, as it has been seen that even experienced teachers after considerable practice have failed in such efforts. Thus at the primary stage, basics are informed and measured, at the secondary stage the cognitive ability to organise the programme is expected, and at the tertiary stage involvement at the application and synthesis stage was limited and only a limited outcome of each individual was all that was expected, and the learners were motivated to go in for, in their life situation. Deliberately, more emphasis is not given to such complex learning outcomes, that will make the learners tend to neglect essential knowledge and skill that are pre-requisites to a higher

order of learning, and to avoid, altogether negligence of such complex learning outcomes.

4.8 Teaching and Testing

The instructional strategy was so planned and the test items constructed that the emphasis is on minimum essential level and shaping and modifying the behaviour to fit a pre-determined level of performance. Outcomes were generally very specific, simple and called for simple, independent responses, except in a very few cases. The objects were more task oriented, and skill learning was the basic essential consideration. Though it was considered as stated earlier the why, and how of doing a thing was essential, and is required for further development of the instructor, the immediate requirement, was to train the instructor, to procure skills in the preparation, and use of the basic minimum essential audio visual aids. Let us examine few objectives.

4.8.1 Low level tasks

* State the three key components of interactive instruction.
* Explain the purpose of a job aid.
* List three levels of audio visual aids production activity.
* List the five senses through which we learn.
* Name six principles of visual design.
* State the two basic kinds of letter spacing for words.
* List four qualities of black board summary.
* State the purpose of bulletin boards.

* Name two materials used for flannel board.
* Name three types of models.
* Enumerate five advantages of filmstrips.
* Enumerate three common elements in projection systems used for instructional purposes.
* Name parts of a common type of slide projector.
* State the function of the objective lens.
* Indicate the kinds of objects that can be projected using an overhead projector.
* State how the visuals to be projected are placed on the platen of the opaque projector.
* Name the two common type of television systems.
* State five purposes served by multi-imagery presentation.
* Indicate the spacing to be given between letters when writing letters for projectuals.
* State three methods of preparing stencil for duplication.
* List five steps involved in presenting mediated materials.

We shall now consider some examples of objectives aimed at the developmental level representing different degrees of progress but they never fully achieve. These are only representative samples taken from 300 objectives given for the course.

4.8.2 Developmental level tasks

* Describe why interactive instruction is easy to validate.
* Determine the factors on which selection of media fit in the

instructional design.

* Differentiate between media and audio visual aids.
* Discriminate different levels of activity under (a) cognitive domain, (b) affective domain, (c) psychomotor domain.
* Relate each of the given visual tools with at least one function of their application.
* Demonstrate ability to write captions using lettering guide and letter stencils, applying factors contributing to layout, readability, spacing and contrast.
* Apply principles of visual design to prepare ten types of charts in his trade area to be used later as teaching aids during practice teaching.
* Prepare posters on safety, applying the principles of design.
* Distinguish between progressive, strip and exploded diagrams.
* Select the most suitable materials for making bulletin boards.
* Distinguish the materials suitable for Flannel board cutouts.
* Suggest a method for reducing (in size) visuals using projectors.
* Identify the kinds of experience that could be provided by real objects.
* Differentiate between mulit-media and multi-imagery presentation.
* Give reasons for using multi-media presentation.
* Compare the use of zoom lens with ordinary lens.
* Differentiate the types of projection screens.
* Enumerate the procedure for operating a filmstrip projector in the correct sequential order.
* Set up, load and operate a slide projector using slide projector using slide trays and remote control.
* Describe the method adopted to avoid sound distortion due to the jerky movement of the film at the gate.

* State the important aspects to be looked into when replacing a lamp in an overhead projector.
* State the precautions to be observed while projection metal objects in an opaque projector.
* Distinguish the three defects in reception which are not due to fault in TV receiver.
* Explain the method adopted for recording narrations and to provide for manual and automatic sound slide synchronisation in audio tape.
* Discriminate letter height of artwork for slides, transparencies and motion picture.
* Differentiate between monaural and sterio systems.
* Prepare an original master copy using duplograph master sheet and hectograph carbon sheet for a given illustration.

The third stage of the development of the change in behaviour has been planned through objectives, which are complex in nature combining many of the concepts and skills learned through the various modules and learning elements within the module. Some examples, are given below:

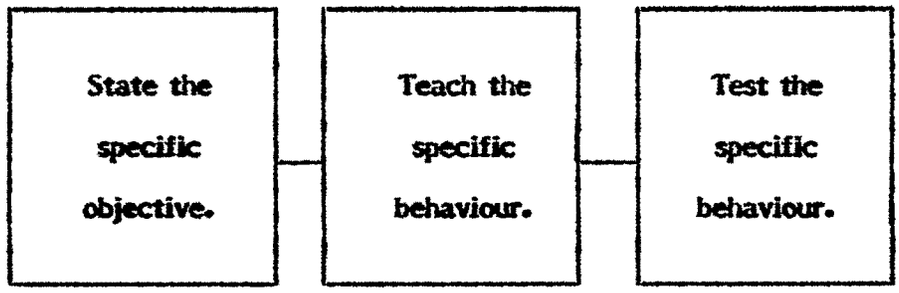
4.8.3 Complex tasks

* Compare and relate the three major modes of learning (enactive, iconic & symbolic) with the three kinds of experiences (direct, pictorial and abstract).
* Plan a well organised chalk board summary on a topic of the trade using colour and illustrate it, on the chalkboard.
* Organise and display a concept on (a) flannel board and (b) magnetic board.

* Organise and present multi-media lesson.
* Record on a stereo tape deck, music from HMV Fiesta and Soni reel tape deck.

4.8.4 Relationship between objective, teaching and testing

These objectives have been stated as tasks to be performed rather than as goals to work toward, to make it possible to have a one-to-one relation between the stated objectives, the teaching procedure and the testing procedure. The specific objective is stated, the specific behaviour is directly taught and the specific behaviour is directly tested.



Eg.	Operate electronic stencil scanner.	Demonstrate and provide practice in operation of electronic scanner.	Present problems requiring operation of the electronic scanner for specific task.

Chart: 4.2 - Relationship between objective, teaching and testing

This is the model used in programmed learning and in usual teaching and training. This model is very useful and followed in establishing direct

relationship between objectives, teaching and testing in the learning of minimum essential; that is, in those areas of learning where the desired outcome is to make all students perform alike at a specified minimum level. This however is in-appropriate at secondary level. The emphasis at the secondary level is on encouraging each learner to progress as far as possible to present goals. The instructional objectives are little more general than at the mastery level. The objectives provide direction for both the instructor and the learner and does not overtly restrict the nature of the instruction or the types of learning activities to be engaged in, by the learner. Understanding specific principles, giving examples, identifying parts, distinguishing one from another, determine the correct from incorrect, etc. are the representative of the variety of behaviour that could be included in this category. The idea here is that the learner is encouraged not to memorise the principles, but to apply his mind and demonstrate his ability. The relation between teaching and testing is illustrated below:

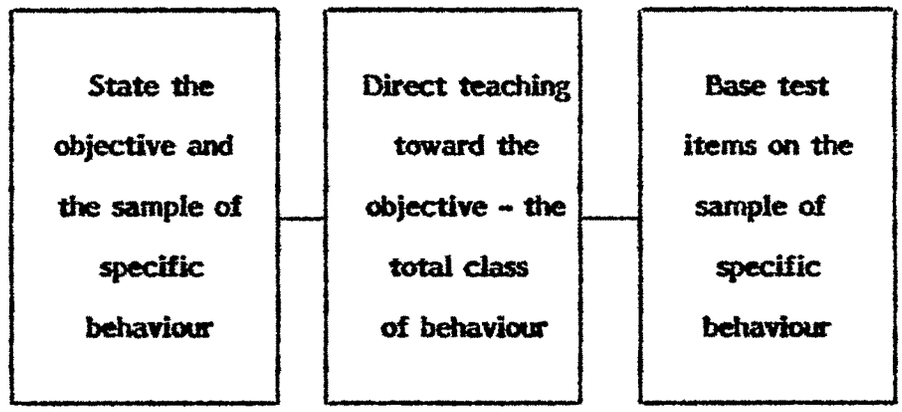


Chart : 4.3 - Teaching and Testing on specific behavioural Change

A similar approach is made for the complex objectives also. While evaluating the course, only sample objectives are taken into account, and therefore in developmental testing, the sample objectives have been taken for the purpose of testing. The classification of the various test items, at the knowledge, comprehension, higher mental abilities, and skill levels are given in chapter 5. The details are appended along with the criterion tests for each module and for the comprehensive course test in volume VII. In the classification made, Bloom (1956) had categorised the levels, the NCERT had redesignated the same. In the Blooms categories of the cognitive domain, descriptions of the major categories are knowledge, comprehension, application, analysis, synthesis and evaluation. The NCERT had designated the higher mental abilities as application and included the behaviours of reasoning, formulating hypothesis, establishing relationships, interference and prediction (Dave, 1975; Srivastava et al, 1978). As such categorisation was an accepted practice, the investigator has used the same in this investigation.

4.9 Sequencing of instruction

4.9.1 Planning the instructional events

In the overall design sequences, for the development of the multimedia package, so far discussion has been centered around approach to course development, review of present subject matter and methodology, constraints in the system and choosing self-instructional materials, development of the course structure towards independent learning, instructional objectives, relating objectives to instruction, teaching and testing. It is now proposed to discuss, sequencing of instruction, then deal with modes and media and finally the

delivery system. The evaluation is discussed in the next chapter.

In any instructional system, the objectives, methods, media and evaluation are designed to be mutually supportive of each other. These are not to be treated in a piecemeal fashion. Discussion has already been centered around the relating of objectives to instruction, teaching and testing. Human performance can be classified into visual, auditory, tactile, kinesthetic, or combination of these. It has been already pointed out that objectives have been analysed as knowledge, comprehension, higher mental abilities, and skill (motor skill). Having classified the objectives into the different categories, and deciding the capability to be learned, it is necessary to go into task analysis. This aspect was not a difficult task, as the entry level was assumed to be nil, in so far as this subject matter is considered. The last of the steps in the instructional development 3 are the teaching steps. The following teaching steps are the events of instructions, as listed by Gagne (1977), Gagne (1975), and Gagne and Briggs (1974) followed while planning the sequencing of instruction.

* Gaining attention
* Informing learner of the objective
* Stimulating recall of pre-requisite learnings (if any)
* Presenting the stimulus
* Providing learning guidance
* Eliciting the performance
* Providing feedback
* Assessing performance
* Enhancing retention and transfer.

4.9.2 Gaining attention

Techniques for gaining attention vary with age of the learner. The younger the learner, the more should be the novelty element the stimuli should have. Colourful objects, unusual sound, startling questions, and other catch attention devices should be more. Briggs (1977) reports that in many activities for individualised instruction programmes such gaining attention devices are less frequently necessary. Normally in self-learning, each one starts his activity when he is ready for it, learners soon learn to turn their individual attention to the new material, often arranged in the form of modules, having many self-instructional features. Maintaining attention may require other techniques. Brief break or change of media or nature of activity may be helpful, during lengthy discussions. These techniques have been used by the investigator in the preparation of the modules. During discussions, overhead transparencies and felt board presentations were used, in addition to the usual chalk board. Place keeping cues, may maintain attention and result in improved learning. (Gagne and Briggs, 1974). This has been incorporated in the textual materials for the modules I, II, IV and V. Change of slide formats, change of colour, change of style of writing, change of cartoons styles in the slide series, occasional but brief stopping of sound, and introduction of peculier sound when the workbook exercise must be over, are all other devices used by the investigator as gaining attention devices. However very little can be done, in sudden changes of plans in small group or large group presentations, and apparently unfortunate unexpected happenings, in individual learning instructional strategies cannot be taken care of by the instructional designer under the gaining attention category, other than already stated in a deliberate manner.

4.9.3 Informing learner of the objective

Several educational technologists, use several words for the same term. Behavioural objectives, performance objectives, instructional objectives and merely objectives are some of the different terms used in this sense. Kibler and Bessett, 1977 points out that students provided with objectives-performance objectives-should demonstrate superior learning to those not provided with objectives. The present state of the objectives came from Bloom et al., 1956, Mager's (1962) book probably initiated the rapid diffusion of the concept of obehavioural or performance objectives scores at all levels. The reaction to him, ranged from complete rejection, to indifference to complete acceptance. But review of research by Kibler, Bassett and Byers (1976) examining 77 studies related to the question of students' possession of instructional objectives have not consistently demonstrated any differential effects on learning attributable to students' use of objectives, whereas reviewing twenty other studies same investigators report, that objectives improved learning significantly, and similar findings were also reported in a number of dissertations reported by Briggs (1977). Until more research findings are reported it would be inappropriate to infer from the above findings that it is essential to provide students with objectives.

Kibler et. al., (1974 a) while reviewing research findings report that investigations of the effects of objectives on efficiency of learning in terms of the time have not consistently demonstrated that student possession of objectives reduces time required for learning. Does the possession of objectives by teachers facilitate students achievements? Though it is reasonable to believe that providing teachers with performance objectives should facilitate

learning, Kibler et. al., (1974 b), says it is a reasonable expectancy, but the present body of experimental literature does not support this contention. Investigations of the effects of teachers' possessing objectives by Baker (1969) McNeil (1967), Wittrock (1962) all suggest that it makes little difference, whether or not teachers possessed objectives. Review of research studies reported by Briggs (1977) in no way suggest that teacher possession of objectives has any deliberating effect on student achievement. Until such time, when research studies are forthcoming, one must rely on the present rational basis for providing teachers with objectives.

Objectives must be made clear. Some of the ways suggested by Briggs (1975) for making objectives clear to the learner used by the investigator are:

* the objective is phrased in language that the learner understands well.
* practice tests in a form parallel to evaluation test was given.
* these tests were valid for the objectives.
* objectives were made simple and less complicated, especially for initial phases of learning.
* samples of acceptable work done by other learners were shown.
* components of the objectives were shown to be related to the total objectives, and the overview.

As suggested by Briggs (1975), detailed objectives have been given, as the learner's sophistication was not that high as a college student undergoing a University course of study. He has suggested that more advanced

students to learn intellectual skills need only a goal rather than detailed and specific objectives.

4.9.4 Stimulating recall of prerequisite learning if any

Each new learning requires use of some prior learning. The basic fact is that we learn or proceed from known to unknown. The difference between a fast and a slow learner in a subject might hinge around the fact of how well earlier learning is recalled and how well the learner can decide which of the recalled learning is applicable for the need of the moment. In the model developed for the skill learning, on which is based the present development, this factor has been stressed again and again. In designing instruction, care has been taken to build complex skill based upon simpler skills. Also in skill learning, it is an accepted fact that the knowledge element is as important as skill. Recall of learning in another domain, definitely facilitate learning in new areas. Similarly in the case of adults, certain acquired attitudes and habits keep the learner at his new task. In developing instruction, this factor has been taken care of.

4.9.5 Presenting the stimulus

Presenting appropriate stimuli is important. It is an accepted concept that too lengthy presentations may make learning difficult for some students, sophisticated learners can learn by responding to and organising the information, while listening over relatively long duration, such as an hour or two, (Briggs, 1977). Each learning element is broken, into short spells to facilitate easy learning. Even in lengthy presentations learning was further facilitated

by including periodic review, summary statements, questions for the students to respond (overtly or covertly), followed by correct feedbacks. This technique has been incorporated in module I, III, IV, and V. It has been suggested by several educational technologists that the more technical and difficult the message, the more important the student gets opportunity to respond and is given feedback. Failure of providing these features make books and media packages boring. Wherever considered necessary, number of examples have been provided, especially for discrimination and concept learning.

4.9.6 Providing learning guidance

As it was felt that, it would not be good to require the learner at the level of the vocational instructor trainee, to discover everything for himself, because he would end up frustrated and untutored, the discovery method was reduced to the minimum, in the approach. This minimum was provided, because, if no discovery is encouraged, the learner later may only be able to solve problems he has been taught to solve, not the new problems he will face later. In a short course of a semester's duration, it is not possible to teach everything on the subject, within the alloted time, but the core skills which enable one to catch up later on, is not omitted.

4.9.7 Eliciting the performance

Elicitation of performances is needed frequently to monitor progress within a hierarchy of skills so that remedial instruction can be given when needed. Sometimes, it is desirable to provide informal test like situations, especially while imparting motor skills. As such, care has been taken to

divide the performance under the motor skills, into a number of divisions, so that the learners could practice each part, then go for the next one, and after mastering the complete set, could take the test. What is the necessity to elicit the performance? The purpose of eliciting the performance is that both learner and teacher are assured that learning has taken place; otherwise the instructional developer is required to provide additional instruction for the competency desired.

4.9.8 Providing feedback

Performance is elicited to find out whether learning has taken place. After each performance has been elicited it is necessary for the learner to know whether the performance was successful and if so it is up to the standard. In the design of instruction for four of the five modules, that is except module II, each unit has been provided with self evaluation keys. The responses to the criterion tests for each unit (learning element) can be compared and the learner can get assurance that his answer is correct. In the case of the motor skill, he knows whether he has done the job correctly or not. Even in the self tests, the learners have been informed that especially with reference to the motor skills, the standard is whether he has done the job correctly or not. For all incorrect actions, he was provided with opportunity to re-do, and correct himself, and proceed to the next stage only after the correct response is exhibited. These points were brought out in the discussion sessions, and the learners helped if they seek help during the practical exercises done in the visual aid workshop. In other cases, the teacher's feedback has diagnostic value for defining additional tutorial or study needed. Even a nod or smile, will convey necessary feedback information to the learner in certain circumstances.

4.9.9 Assessing performance

Eliciting performance is required for smaller units of instruction than are involved in the evaluation tests at the end of the module or for comprehensive tests, which are used for grading purposes as illustrated in the self learning model developed. The major diffeence is that 'eliciting' is done several times in the sequence of learning within a single objective, while 'assessing' is done after the learning and instruction have been completed for the entire objective. The other distinction between eliciting the performance and assessing performance as the terms are used here is the adequacy of assessment. Whereas either the teacher or the instructional developer may accept a response or two during the eliciting stage, an adequate measure of a performance on an objective is needed at the assessing stage. It should be reliable, valid and free from distortion. Chance or guessing answers are to be avoided. A valid assessment measures the performance described in the objective, not some other performance. Care was taken to see that the assessment was free of distortion. In actual practice this could not be controlled. A learner was expected to do a particular job in a particular way. Unless one invigilator was present for every learner, this could not be controlled. Only the end result could be checked and evaluated

4.9.10 Enhancing retention and transfer

A very important factor every instructional designer has to keep in mind is how much information is expected to be learned, and further retained for some future useful purpose. Judicious expectation is required to be employed in this case. No learner can be expected to be a walking

encyclopedia or a computer. Retention can be enhanced by spaced reviews. Certain skills once learned are retained intact after years of no practice. Examples are swimming, cycling, car driving, typing, photography, etc. Regardless of the domain of learning, the purpose of learning is to remember longer what has been learned faster and use whenever needed. While every one may normally remember isolated facts and dates such as the date of independence, the date of Mahatma Gandhi's death, the day on which India became independent because of rich meaningful associations and frequent reviews that occur, the day in which we in India got the first Radio transmission or Television transmission may not be remembered by a majority of persons. More often many concepts learned in schools and colleges disappear, because there is no opportunity to use them again in life situation. There are certain skills and knowledge, which might be forgotten, but can be relearned easily at a later time. Some of the skills learned, if not practiced often, are forgotten, they can very easily be relearned if needed later, but perhaps forgotten if not continuously learned. In addition to retaining skills, it is necessary to generalise them soon after initial learning, if they are to be of greatest value in the future. How can the instructional developer help the learner to generalise? It can be done by building in generalised experience, after the skill has been learned and demonstrated. This was effected by making the learners use the various aids, and equipment in the practice teaching classes, so that they will get enough experience, and this fact was emphasized to enable the learners to keep using what was previously learned. But this will not be the end. Unless the institutions where these prospective instructors worked are occasionally visited later, to see how discovery and generalisation are handled unfortunately, this aspect oof enhancing retention and transfer cannot be fully implemented in any instructional system of the kind of this development.

4.10 Modes

4.10.1 The Learner

Normally an instructor selects materials, media, and strategy for presentation, while when the instructional materials are developed by an instructional developer not only the design of the instructional materials, but when it becomes a multi-media package, the entire strategy is decided by the instructional developer, as the total system will be operative. Harris (1979) defines modes and media thus:

"MODES: A description given to the way in which learning takes place. Examples are - individual, small group, and large group."
"MEDIA: The means by which a message is conveyed. Examples are - print, film, magnetic tape."

Modes of learning include lectures, small group work, laboratory work, workshop practice and individual work. No learning can take place without the learner. The most common arrangement of teaching is by the use of the lecture, the lecturer as active participant and the learner as passive participant. Individual work is considered to be exclusive responsibility of the learner. This provides security for the lecturer. When individual learning takes place, some teachers think there is no control for him over the learner and he cannot say that he has covered such and such portion. It is the learner who actually has to do the learning, whether it is the teacher centered instruction or the learner centered individual instruction, and no education or training can take place without him. But it is possible to plan instruction without the immediate presence of a teacher, but no one can eliminate the teacher altogether.

4.10.2 Modes and Modular approach

The instructional materials have been developed specifically for teaching the course 'Audio Visual Education' to the instructor training programme for the vocational training scheme. The multi-media package has been developed taking into consideration the campus course, and a correspondance course or distance education was not conceived when the package was developed, though the developed package could be extended to such a programme if need arise. But certainly, the investigator had at the back of his mind, a thought regarding the modular pattern of training being thought of by the Directorate General of Employment and Training, and how best and easily this package could be used as such or used after making little changes if necessary. Also, the investigator kept in his mind, the possibility of using the package, module wise, for the deputed personnel from the industries for short durations of less than three months, so that the components of the package -modules- could be used as 'mini-courses.' With this background, further discussion on the selection of modes, methods and media, will be more significant. As already explained elsewhere, the multi-media package has been designed for individualised, small and large group learning though at present some of the modules, especially module I and III cannot be conceived for individualised learning, except in certain industrial establishments where training centres have equipment required for their use. In this connection it can also be said that in the case of high motivated learners, it is possible to find places where this could be found, for they may not be able to come out of their working places. In the case of module II, no special equipment other than overhead and opaque projectors are required, which are available in all the training institutions and establishments in the country.

Module IV and V, are also not difficult, for the equipment required for this module, are available even in many homes. Module IV, is only desirable element of the instructional phase and this module can also be taken at a place where most of the equipment except the electronic scanner and photo copier are available. But by and large, these days, most of the new institutions, and establishments are going in for these two equipment for their regular use, and therefore in another three to four years, it will be possible that most of the institutions of training and development will have the equipment required for this module. The various media combinations used are explained in the flow chart 4.4. The problem and reasons for choosing different modes have thus been explained and it is now possible to go into the question of " WHY MULTI-MEDIA PACKAGE? ".

4.11 Multi - Media

4.11.1 Why multi-media?

In the field of learning research, evidence has mounted on all sides that new learning is strongly influenced by what has been previously learned (Briggs, 1968). Yet more scientific data is required to differentiate between incidental and intentional learning. The field of multi-media iinstruction is a little more than two decades old in the United States, United Kingdom, Germany and other developed countries, but still it is new to many of us. Even to those who are accustomed to the use of the approach, indigenous production of a variety of media, on complete course materials being not available, they will have to turn to other developed countries, whose materials may not suit our clientele. Very little research findings are available in

our country in the area of multi-media packages, and almost nothing with respect to vocational training and education. Until more research is carried out, and models developed to suit our conditions are available, no positive impact can be created in this direction. Use of programmed learning materials have resulted in more effective instruction than use of a single medium or other conventional or traditional forms of instruction. Programmed sound-slide presentation for instruction has produced more effective instruction than using other single medium. While the spoken word and printed word are very important forms of instructional stimuli, they are not the most effective or economical teaching stimuli for some kinds of obejctives (Briggs, 1967). Graphic illustration is the feature of most text books, and motions and space relations are better depicted by three dimensional models or motion pictures. Sounds other than speech need to be heard for many purposes-music, equipment operation, car engine. Thus other forms of audio and visual stimuli are needed to supplement written and spoken words. In addition to selecting sensory mode to be stimulated, verbally or visually, it is important to point out that various instructional objectives present different kinds of learning, for each of which the external conditions of learning may be quite different (Gagne 1965). Various media devices are of differential effectiveness, depending upon the exact learning requirement imposed by the instructional objective. The conditions required for different kinds of learning can provide analysis of instructional events resulting in selection of relevant instructional media. These can result in the means of achieving improved effectiveness in learning. A necessary condition may be contiguity between two stimuli, and intensity of the two stimuli is necessary. It is due to the variety of stimuli needed primarily in auditory and visual modes, upon which the reuirement for multi-media instruction is based.

4.11.2 Media as vehicle for stimulus presentation

Examples of media include not only film, slides, filmstrips, overhead transparencies, tape, but also teacher's voice, smile, a pat on the shoulder of the learner, print, physical objects, pictures, charts, and of course television. Planning instructional events have been dealt in detail in paras 4.9.1 to 4.9.10. It is now proposed to discuss how to relate the instructional events with the type of stimuli and media. For this the first consideration is what type of stimuli is to be employed? We may choose from among spoken words, written words, still or motion pictures, real objects, live demonstrations. Next consideration is, which media can present the desired type of stimuli- written instructional materials, textual materials, slide-tape presentations, audio instruction, live demonstrations with real objects, and first hand direct experience with real objects? The next item of decision making is, which would be the best media, ignoring cost, ease or use etc? Taking into consideration cost, time and other facilities, which media is suitable for adoption? The last question to be decided is how can the appropriate considerations of learning be incorporated into the desired instructional events, in the chosen media? This type of decision making is not usually done by a single individual, but by a group of specialists. Of course after providing necessary prescriptions, they are examined, discussed, and improved by the group. This work, though initially done by the investigator, was discussed with the instructional developing team consisting of the faculty leader, and the instructional staff. Another important consideration was the cost of production of the multi-media package, time required for the production, and time required for implementation, as an instructional development which cannot be implemented will remain only for academic discussion. All these factors, together with the planning instructional events, the conditions of learning and the suggestions of the

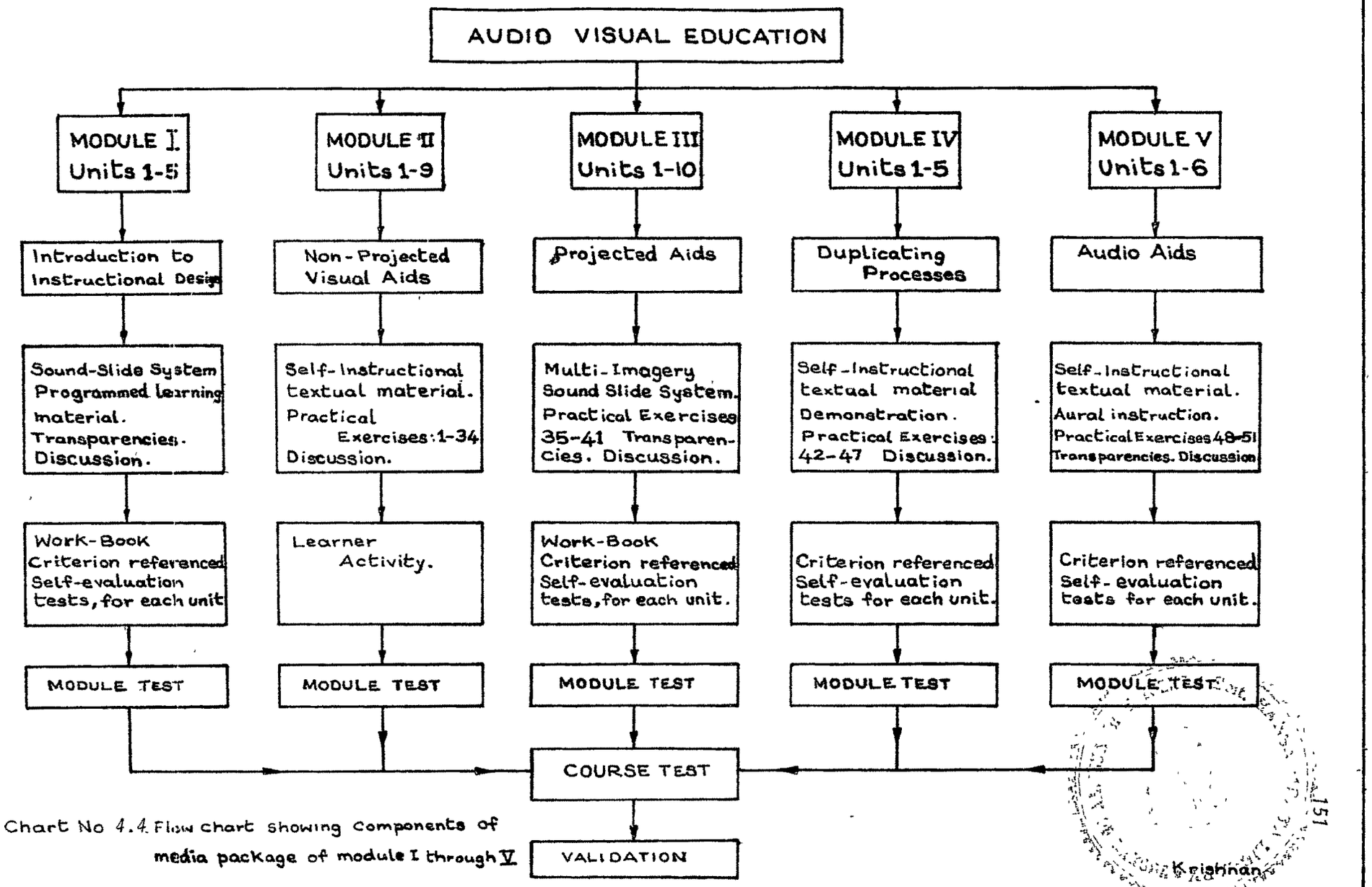


Chart No 4.4 Flow chart showing components of media package of module I through V

panel of experts were all taken into account before the draft learning package was designed. Their opinions on the implementation of the various learning activities planned for each unit-learning element-were sought, and together with the feedback from the first tryout, the media package was revised, and the strategy is shown in chart 4.4. Among the revisions carried out the following are a few.

1 Addition of unit 5 to Module I on Learning and Visual Aids Programmed Instruction format.

2. Using transparencies in the discussions at the end of the Module I, to explain the concepts and doubts raised.

3 Providing flip charts and transparencies for discussion session on various aspects of visual design, and using felt board cut-outs, the sketches of which were provided for various units under module III.

4 Providing the following for various units under module III.

a Transparencies for the different projection equipment.

b Big cut-outs of the schematic diagrams of the different equipment were made and exhibited in the visual aid workshop, so that the learners can refer to them, and discuss amongst themselves, various points of doubts.

c Examples of the multi media presentation for a group study as well as independent study was made and given.

d V.C.R. recording from the telecast was demonstrated.

e A number of additional slides were added to various units. Originally module III was conceived as a simple slide presentation with sound. This was changed to multiple projection or multi-imagery, a major change, otherwise it was necessary to increase the number of slides in a linear format, which would have increased the

number, consequently the number of units, and ultimately the time of the whole course. Now in succession, while the commentary is on, the slides are shown on the screen, two or even three at a time, thus explaining certain situations and concepts more easily.

5 Additions of demonstrations for the different operations of the duplicating equipment for the module IV. In fact this has increased the effectiveness of the performance of the learners not only in their performance on motor skills, but also knowledge areas.

6 Additional commentary with audio tape was used for three practical exercises for module V. Here the teacher did demonstrate the practicals only on demand but this commentary was used by the instructor trainees to do the practical without teacher-demonstrations.

Many other trivial changes were made both in the textual material and in the visuals, including format and contents, the lettering of slides, all as suggested either by the instructional developing team or the learners who were individually consulted.

4.12 Delivery System

4.12.1 Design

The instructional system commonly refers to the total package of the materials, tests, student workbooks, and instructions to teachers that are needed to reach the goals of the entire course along with all supporting activities and processes required to operate the system as it is designed

to be operated. The delivery system was developed and turned over to the user for installation and use.

No uniformity in delivery system could be found by searching the literature. A book and the teacher may operate as a delivery system. Information sheets distributed by the instructor may be added to the above delivery system, to supplement the books. Library assignments will be another addition. Books or textual materials, slide-tape packets, transparencies, drawings, team teaching and discussions may be the delivery system in another place. Programmed instructions alone or in combination with the above may be added. Audio with self-instructional facilities or for small groups may be component for another delivery system. In any delivery system, the teacher/instructor cannot be eliminated, he may be eliminated from the classroom teaching or instruction, but he will function as a component of the delivery system.

While the instructor, has not been used in the actual deliveryof the stimuli, except through discussion sessions, the instructional stimuli are replicable. The stimuli presented do not disappear, and therefore, they can be tried out, heard again, discussed, and based on which the instructional materials are revised. This approach of recording during discussions had to be discarded, as the discussion teacher never used to be at one place, during discussion for recording, or used to forget carrying the microphone all the time he gives his comments. It was also a difficult task with the facilities available to record all the comments of the learners, though the class used to be as thin as 30. The schedule of the delivery system, as given in volume II to VIII are appended below.

4.12.2 Schedule of delivery system

1 Instructions to master trainers handling the classes were prepared, and given to them at the time of initial briefing. It is noteworthy to state here, that these master trainers who were used for the instructional planning were used for managing the learning situations. These instructions contained details of the content of each modular package of the multi-media instructional materials, what he is to do , how he is to implement the learning, what equipment are needed, and all training activities. This instruction was provided separately for modules 1 to 5.

2 Schedule of learner activities and self-tests for each learning element and key answers.

3 Schedule of practical exercises, and assignments and grading procedure for them.

4 Script book for tape recorded commentary, slides, workbook, tapes, discussion instructions for the modules 1 and 3.

5 Self-instructional textual materials with learner activities for module 2.

6 Self-instructional textual materials with criterion tests for each unit of instruction, key to each criterion test item for module 4 and 5, with additional taped commentary for three practical exercises in module 5.

7 Criterion tests for each module and answer keys for each one of them, including sample practical written exercise answers.

8 Course test for the whole course and answer keys for the course test.

9 Grading instructions for the course test and module tests with details of the taxonomical break into knowledge, comprehension, higher mental abilities and skill for each one of the tests.

4.13 Conditions of learning

All learning units, of each of the five modules thus developed are based on principles of instruction derived from certain conditions of learning which have demonstrated to be effective during the 15 years of association of the course developer with instructional development particularly with regard to instructor training programmes. The following are the salient points of these conditions and principles.

Conditions of Learning	Principles of Instruction
1 All learning is most effective where the outcome are immediately used in real situations. (Classroom and shopfloor)	1 Each unit of the different modules is designed to achieve specific objectives emphasising skills that can be identified by the instructor trainees for meeting immediate individual requirements and organisational requirements. The theme was to stress links between training situation and the practice teaching and actual work situation.
2 Learning is most effective when objectives	2 Each module is self contained and is designed to meet explicit specified

Conditions of Learning	Principles of Instruction
are clear and explicit and not implicit.	pre-determined goals and objectives.
3 Learning is most effective when content to be learned makes use of the experience of the learner.	3 The course is organised for participants from different background, from various states, and different disciplines. Whereever considered necessary structured learner activities are included based on the entry level competence. The course is practical oriented requiring everyone to use his manipulative abilities with tools and equipment. Only essential related theory needed is incorporated.
4 Learning is most effective in supportive and cordial non-authoritative environments.	4 Overall time to complete unit tests and assignments are set in advance. The module test for theory and practice is also fixed at the beginning of the course for every module. Similarly timing for comprehensive course test is also decided. Thus there was fixed time targets for all work. The instructor trainiees were allowed to choose their own time for the AV workshop work by fixing appointments, within certain overall administrative

Conditions of Learning	Principles of Instruction
	conveniences. Attendance and physical participation in any group discussion was optional. All activities are arranged so as to enhance confidence and rapport, and reduce tension.
5 Reward rather than punishment enhances learning.	5 Inadequacies are considered as learning problems and dealt sympathetically on one to one ratio. All activities in the course are designed and conducted to lead to the achievement of objectives with no harassment or criticism of individual instructor trainees. Individuals are never ridiculed. Self evaluation of unit test and learner activities followed by discussion encouraged the instructor trainees in their further participation.
6 Individual activities increase enthusiasm, commitment and thereby learning.	6 The multi-media package is highly structured and activities designed to decision making at every step by individual learners. A sense of competitiveness increased the commitment.

Conditions of Learning	Principles of Instruction
7 The absence of anxiety in learning situations usually has beneficial effects.	7 Trainers and trainees accept each other in group work and discussions as members of a cooperative team, each respecting the ideas of the other and initial stress on self evaluation lead to absence of anxiety to a great extent.
8 Active participation in learning enhances its effectiveness.	8 In all learning modules and units, the instructor trainees are actively involved in structured learning experiences. Learner active participation is built in all the learning units of each module, including evaluation of unit tests.
9 Involvement of the learners in the scheduling and operation of the learning situation enhances the effectiveness of the learning.	9 A great deal of emphasis is placed on the instructor trainees planning and sharing responsibility for the organisation of learning activities including decision about scheduling, procedures, methods and materials.
10 Learning is more effective if learners receive information on their rate	10 The programme are highly structured. Both content and practical activities are divided into clearly defined steps.

Conditions of Learning	Principles of Instruction
of progress towards goals and objectives.	After each phase of the programme, the instructor trainees are given opportunity to evaluate the outcomes of the activities in relation to the objectives and to report back on the progress in discussions.
11 Frequency of repetition is important in acquring a skill.	11 Opportunity is provided for repetition of skills. Skills and concepts are reintroduced through application of a concentric curriculum design. The same skill or idea is treated in a variety of situations.
12 Reinforcement through recognition and reward for achievement enhances learning.	12 All activities are designed to lead to definite learning outcomes. Opportunities are provided for participants to be rewarded by sharing their success with others and allowing them to use the principles and materials in their practice teaching sessions.
13 Provision of feedback on the nature of specific response enhances learning.	13 Opportunity is provided to do self evaluation against given objectives and criteria laid down, and keys were provided, for most of the items. The instructor trainees were given opportunity to develop their own evaluative criteria. Further

Conditions of Learning	Principles of Instruction
	they were given opportunity to discuss among themselves and also with the master trainer.
14 Structuring a learning sequence into logical and overt steps and hierarchies enhances learning.	14 All course materials are structured in terms of both logical sequencing of subject matter and careful arrangement of strategies, methods and media. These are made obvious to the learners.
15 Variety in methods and media enhances learning.	15 Each module involves a variety of methods and media appropriate for achieving the stated objectives. Individuals were given opportunity to work themselves and group discussions were encouraged. to discuss on the performance and results.
16 Learning can best be achieved by interaction.	16 Interaction between the learners and the presentation is provided in the learning modules. Critical evaluation of the module tests and the feedback provide ample opportunity for further interaction during discussions and better learning.

Conditions of Learning	Principles of Instruction
17 Common learning experiences as a member of a small group enhances learning by an individual.	17 All modules include a great deal of work, sometimes under the direction of a leader, but more usually involving leaderless groups assigned common learning tasks.
18 Membership of a small group for discussions enhances learning if the process involved are made overt.	18 The course materials are planned for self-paced semi-programmed mode of learning. The learners are encouraged to be self-analytical, in that all strategies and methods are overt and open to critical discussion and evaluation in small groups.
19 Group atmosphere of learning influences its effectiveness.	19 Small group activities occur in all modules and are based on the principles of co-operation, decision making, group identification and group problem solving.
20 Learning can best be achieved when the trainer displays enthusiasm and interest.	20 The team of trainer-trainers are briefed well to be committed trainers to be an interactive team along with the learners. Enthusiasm was sparked through structured interactions between

Conditions of Learning	Principles of Instruction
	learners and course materials, and later exhibited in their practice teaching sessions.
21 Learning can be achieved through the imitation of the behaviour of others. (modellings.)	21 Where practicable, the modules use exemplary methods. During discussions, only the learners were encouraged to bring points. Different media were used during the discussions, to explain concepts. The same behaviour was exhibited by most of the instructor trainees during their practice teaching sessions.
22 Proximity in time and space of elements to be learned enhances learning.	22 All related activities and concepts of a given unit are brought together in time and space by the structure of the entire programme and by the fact that each learning unit is condensed into a 45 minutes session, either alone, or in a small group.
23 Learning is more effective if individual differences are catered for in the learning situation.	23 Individual differences are catered for by the formation of common interest. Those who are unable to come up to their expectation, were encouraged to participate

Conditions of Learning	Principles of Instruction
	in discussion either in the small group activities or alone with the master trainer by providing a choice to the learner. Individual activities are essential in the skill component part of the course, and this provided opportunity for reinforcement.

This chapter has thus applied the model of the skill and knowledge development model for the design of modular instruction for teaching a course on Audio Visual Education to the instructor trainees. This chapter dealt the details of the course design and the development of multi-media package-approach to the course design, constraints in the present system and methodology and reasons for choosing self instructional materials, development of the course structure, towards independent learning, instructional objectives, relating objectives to instruction, teaching and testing, sequencing instruction, modes, choosing multi-media, and the design of the delivery system, thus discussing at length the objective on developing the multi-media package. Chapter 5 deals with the other major objective, namely validation of the multi-media package.