Chapter – 4

DEVELOPMENT OF INSTRUCTIONAL MATERIAL

Development of Instructional Material for two methods of teaching i.e. Self-learning Modules and Conventional Mode of Teaching is a milestone in the present study. Though the subject matter for both the methods of instruction was same but the procedure for development of material for Self-learning Modules and Lesson Plans was different. Ten Self-learning Modules as well as ten Lesson Plans were developed on the selected topics of Business Management. Development of Instructional Material in this chapter deals with:

4.1 Task Analysis
4.2 Development of Self-learning Modules
4.3 Development of Lesson Plans for Conventional Mode of Teaching
4.4 Comparison of Validity of Self-learning Modules and Lesson plans for Conventional Mode of Teaching

4.1 TASK ANALYSIS

Task Analysis is considered as the first step in the designing of any instruction to determine what should be taught. (Polson 1993)

Task analysis can be defined as the study of what a user is required to do, in terms of actions and cognitive processes to achieve a task objective. The idea is that task analysis provides some structure for the description of tasks or activities, which then makes it easier to describe how activities fit together. (Kirwan and Ainsworth, 1992)

Task analysis is the analysis of how a task is accomplished, including a detailed description of both manual and mental activities. It describes the task complexity, environmental conditions, necessary equipments and any other unique factors
involved in or required for one or more people to perform a given task. Task analysis emerged from research in applied behaviour analysis.

The term "task" is often used interchangeably with activity or process. Task analysis often results in a hierarchical representation of what steps it takes to perform a task for which there is a goal and for which there is some lowest-level "action" that is performed.

It is a model that is applied to classroom tasks to discover which curriculum components are well matched to the capabilities of students with various individual differences. It also helps to discover the modifications in tasks. It finds out which tasks a person has not mastered. In behaviour modification, it is a breakdown of a complex behavioural sequence into steps. The steps for task analysis are given below:

4.1.1 Writing Terminal Objectives in Behavioural Terms
4.1.2 Identifying Entry Level Behaviour
4.1.3 Writing Task Description
4.1.4 Writing of Types of Learning

4.1.1 Writing Terminal Objectives in Behavioural Terms

Terminal objectives refer to the mastery level of a given subject matter. The mastery behaviour is depicted as terminal objectives in Task Analysis. Moreover, designing of terminal objectives is the first step for development of Instructional Material. In this study, Mager’s Approach (1962) was followed as it identifies terminal behaviour by name and can specify the kind of behaviour that is expected from the students after achieving the objectives.

In this study, the researcher specified the terminal behaviour for ten topics of Business Management for Self-learning Modules and Conventional Mode of Teaching.
4.1.2 Identifying Entry Level Behaviour

Entry Level Behaviour is that behaviour which the learner is having before he acquires the new knowledge. Therefore, it is the beginning line from where the new knowledge of the topic starts.

In this study, the researcher identified the entry level behaviour of the students on each topic to be taught.

4.1.3 Writing Task Description

Task Description is the full description of the terminal behaviour. In this step, the task is broken up into sub-tasks. The new knowledge in each topic was considered as a task and this task was further divided into different sub-tasks. The breaking down of the task into sub-tasks was done to the maximum possible limit which could be easily understandable by the students. These sub-tasks of the task were systematically organised.

In this study, the researcher broke the task into sub-tasks keeping in mind the entry level behaviour and terminal behaviour of the under graduate students.

4.1.4 Writing of Types of Learning

While analysing task, it is essential to determine the types of learning involved in the task. Also, types of learning are written corresponding to each sub-task. It proves helpful in presenting the content in a hierarchical order. That is why task analysis was considered as the first step for developing Self-learning Modules and Lesson Plans.

In this study, Task Analysis was prepared for all the ten topics specified from Business Management and task analysis of all the ten topics is given in Appendix I.
4.2 DEVELOPMENT OF SELF-LEARNING MODULES

The Self-learning Modules were developed in the form of self-instructional booklets. These Self-learning modules were self-directional and self-paced consisting of various steps ranging from instructions for the students to recapitulation.

Various researchers like Minnick (1989), Duldulao (2000) and reports have provided formats of developing Self-learning Modules. In the present study, following steps have been followed:

1. Writing of Self-learning Modules
2. Editing and Reviewing
3. Tryout Phase
4. Reliability
5. Validity

1. Writing of Self-learning Modules

Writing of Self-learning Module was related with the effective presentation of the material for teaching-learning.

(i) Writing of instructions for the learners to use the Self-learning Module
(ii) Procedure for writing Self-learning Module

(i) Writing of instructions for the learners to use the Self-learning Module

Directions were given at the first page of the booklet for the use of Self-learning Module by the students. These were concerned with how to go through the Self-learning Module. It also explained how to read the booklet, how to look at the visual material, how to give answers to the questions given after every frame. Along with it, this also helped to find out the correctness of one’s own answers.
(ii) Procedure for writing Self-learning Module

The Self-learning Module was developed in the form of frames. The following steps were taken care of:

(a) Components of a frame
Each frame consisted of three components:
The first component of frame was related with the presentation of teaching points (content matter) in detail. The content was presented with the help of real life examples, diagrams. Meaning of difficult words were also provided at the end of every frame.
The second component of the frame consisted of different types of questions related with the content explained in the concerned frame. The questions were of the various types such as fill ups, draw the diagrams, short answer type and matching type.
The third component of the frame was related with the immediate feedback of the responses given.

(b) Frame Size
Size of the frame varied from two lines to a paragraph as per the nature of the topic. The total number of frames written in a Self-learning Module was equal to the total number of teaching points.

(c) Linking of information
Content was presented in such a manner that continuity was established in the frames. Each frame was related with its preceding frame.

(d) Response mode
After going through every frame, the students were required to give answers of the questions. The questions were of completion type, fill-ups type, draw the diagrams type, matching type and short answer type. After this, they were asked to compare their answers with the correct answers given below the questions. They were told
that they could proceed to the next frame if their answers were correct otherwise they were asked to go through the frame again till the correct answers were given.

2. Editing and Reviewing

After the development of Self-learning Modules, these were considered for analysis. It helped in the finalisation of qualitative self learning material. It was done in following way:

(i) Editing by the Subject Matter Expert
(ii) Editing by the Self-learning Module Expert
(iii) Editing by the Language Expert

(i) Editing by the Subject Matter Expert

Subject matter expert checked over the instructional material to make sure that terminology used is correct, update information is provided and every important detail is assimilated. After getting the valuable suggestions from the concerned expert, necessary changes were incorporated.

(ii) Editing by the Self-learning Module Expert

Self-learning Module expert reviewed the instructional material to make sure that the material is well organised and the presentation is technically appropriate. Necessary changes were made as per the guidance provided by the expert.

(iii) Editing by the Language Expert

Language expert examined the language of Self-learning Module. It was done to avoid the discrepancy of rules of grammar. Required changes were incorporated as per the valuable suggestions obtained by the language expert.
3. Tryout Phase

Appraisal of Self-learning Modules was done in this phase. It was related with the tryout of revised SLMs (after incorporation of suggestions given by various experts). It was done in following ways:

(i) Individual Tryout
(ii) Small Group Tryout
(iii) Field Tryout

(i) Individual Tryout

Individual trial was performed on 5 students one by one in an informal setting by having face to face interaction. They were told that they have to complete the Self-learning Modules but do not consider it to be a test. They were told about the purpose of this individual tryout. It was performed to get feedback from the students about language used, understanding of content matter, suitability of examples, understanding of diagrams, length of frames and Self-learning Modules, clarity of questions asked, etc. Necessary changes were made after having feedback from the students.

(ii) Small Group Tryout

Small group trial was performed on a group of 12 students after incorporating the necessary changes made on the basis of individual tryout. Students were told about the purpose of this tryout. They were told that they have to complete the Self-learning Modules but do not consider it to be a test. This tryout was performed to get feedback from the students about language used, understanding of the content matter, suitability of examples, understanding of diagrams, length of frames and Self-learning Modules, clarity of questions asked, etc. Required modifications were made as per the suggestions received from the students.
(iii) Field Tryout

Field trial was performed on a group of 23 students of B. Com. 1st year of Bhagwan Parshuram College, Kurukshetra in a formal setting. Criterion Referenced Test of each Self-learning Module was administered on the students as pre-test. After that, Self-learning Module was given to the students for self learning. After the completion of each Self-learning Module, Criterion Referenced Test was administered on the students as post-test. Error Rate and Gain Ratio were calculated to check the reliability and validity of Self-learning Modules.

4. Reliability of Self-learning Modules (SLM)

This is the last stage in the development of Self-learning Modules. Reliability of Self-learning Module was established in terms of Error Rate whereas Validity was found on the basis of Gain Ratio.

Reliability is the consistency of the results with which the test measures what it claims to be measured. In this research work, the reliability of Self-learning Modules was tested by calculating Error Rate. Error Rate was calculated on the basis of students’ performance on each C.R.T. If on a particular question in C.R.T., the student is unable to respond correctly, it is termed as an ‘error’. The errors committed by the students on all the questions in each C.R.T. were counted and added. Error Rate is calculated with the help of a formula in which numerator consists of total number of errors made by all the students on a particular C.R.T. Denominator is indicated by the multiplication of total number of students and total number of required responses on a particular C.R.T. Following is the formula of calculating Error Rate:

$$\text{Error Rate} = \frac{Ne \times 100}{Ni \times Nr}$$

Ne = Total no. of errors made by all the students
Ni = Total no. of students learning through the Self-learning Module
Nr = total no. of required responses in the C.R.T.
Table 4.1

Calculated Reliability in terms of Error Rate on CRT for ten topics of Business Management

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Self-learning Module</th>
<th>Ne</th>
<th>Nr</th>
<th>Ni</th>
<th>Error Rate (%)</th>
<th>Percentage of Success (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Planning; Meaning and Types of Plans- (A) On the basis of Time (B) On the basis of Managerial Levels</td>
<td>17</td>
<td>15</td>
<td>23</td>
<td>4.93</td>
<td>95.07</td>
</tr>
<tr>
<td>2.</td>
<td>Types of Plans on the basis of Use</td>
<td>46</td>
<td>11</td>
<td>23</td>
<td>18.18</td>
<td>81.82</td>
</tr>
<tr>
<td>3.</td>
<td>Organising; Concept and Types of Organisation Structure- Line Organisation Structure &amp; its Types, Line &amp; Staff Organisation Structure</td>
<td>23</td>
<td>10</td>
<td>23</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>4.</td>
<td>Functional Organisation Structure</td>
<td>19</td>
<td>14</td>
<td>23</td>
<td>5.90</td>
<td>94.10</td>
</tr>
<tr>
<td>5.</td>
<td>Leadership; Meaning and Styles-Motivational Leadership Styles</td>
<td>24</td>
<td>13</td>
<td>23</td>
<td>8.03</td>
<td>91.97</td>
</tr>
<tr>
<td>6.</td>
<td>Power Based Leadership Styles and Result Based Leadership Styles</td>
<td>4</td>
<td>13</td>
<td>23</td>
<td>1.34</td>
<td>98.66</td>
</tr>
<tr>
<td>7.</td>
<td>Motivation; Meaning, Process and Theory of Motivation</td>
<td>26</td>
<td>10</td>
<td>23</td>
<td>11.30</td>
<td>88.70</td>
</tr>
<tr>
<td>8.</td>
<td>Communication; Meaning, Process and Principles of Effective Communication</td>
<td>18</td>
<td>15</td>
<td>23</td>
<td>5.22</td>
<td>94.78</td>
</tr>
<tr>
<td>9.</td>
<td>Communication Network</td>
<td>36</td>
<td>15</td>
<td>23</td>
<td>10.43</td>
<td>89.57</td>
</tr>
<tr>
<td>10.</td>
<td>Controlling; Meaning and Process</td>
<td>26</td>
<td>11</td>
<td>23</td>
<td>10.28</td>
<td>89.72</td>
</tr>
</tbody>
</table>

Error Rate of all 10 Self-learning Modules was less than twenty percent which indicated that all the Criterion Referenced Tests and Self-learning Modules were understandable for the students. It means 82% to 99% of the students responded correctly on 82% to 99% of the items of Criterion Referenced Tests of Self-learning Modules. Thus the Criterion Referenced Tests of Self-learning Modules were found reliable for experimentation.
5. Validity of Self-learning Modules

Validity is defined as the accuracy with which it measures what it is supposed to measure. Validity of Self-learning Modules was calculated by finding the Gain Ratio. Gain Ratio is a measure of change in behaviour among students. It is found by dividing mean gain between pre-test and post-test scores by the possible mean gain scores. The possible gain is termed as the difference between the mean of pre-test scores and the full mean of post-test scores. It is calculated with the help of following formula:

\[
\text{Gain Ratio (for Validity of SLM)} = \frac{\text{Mean of Post test scores} - \text{Mean of Pre test scores}}{\text{Mean of Full scores} - \text{Mean of Pre test scores}}
\]
Table 4.2

Calculated Validity in terms of Gain Ratio for ten Self-learning Modules

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Self-learning Module</th>
<th>Pre-test mean score</th>
<th>Post-test mean score</th>
<th>Full score</th>
<th>Gain Ratio</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Planning; Meaning and Types of Plans- (A) On the basis of Time (B) On the basis of Managerial Levels</td>
<td>2.74</td>
<td>14.26</td>
<td>15</td>
<td>.94</td>
<td>94</td>
</tr>
<tr>
<td>2.</td>
<td>Types of Plans on the basis of Use</td>
<td>.09</td>
<td>9</td>
<td>11</td>
<td>.82</td>
<td>82</td>
</tr>
<tr>
<td>3.</td>
<td>Organising; Concept and Types of Organisation Structure- Line Organisation Structure &amp; its Types, Line &amp; Staff Organisation Structure</td>
<td>.70</td>
<td>9</td>
<td>10</td>
<td>.89</td>
<td>89</td>
</tr>
<tr>
<td>5.</td>
<td>Leadership; Meaning and Styles- Motivational Leadership Styles</td>
<td>2.04</td>
<td>11.96</td>
<td>13</td>
<td>.91</td>
<td>91</td>
</tr>
<tr>
<td>6.</td>
<td>Power Based Leadership Styles and Result Based Leadership Styles</td>
<td>2.17</td>
<td>12.83</td>
<td>13</td>
<td>.98</td>
<td>98</td>
</tr>
<tr>
<td>7.</td>
<td>Motivation; Meaning, Process and Theory of Motivation</td>
<td>1.70</td>
<td>8.87</td>
<td>10</td>
<td>.86</td>
<td>86</td>
</tr>
<tr>
<td>9.</td>
<td>Communication Network</td>
<td>3.78</td>
<td>13.44</td>
<td>15</td>
<td>.86</td>
<td>86</td>
</tr>
<tr>
<td>10.</td>
<td>Controlling; Meaning and Process</td>
<td>1.87</td>
<td>9.87</td>
<td>11</td>
<td>.88</td>
<td>88</td>
</tr>
</tbody>
</table>

Table 4.2 indicates the Gain Ratio of all the Self-learning Modules. Gain Ratio ranged from 0.82 to 0.98. It shows that gain ranges from 82% to 98%. It means the Self-learning Modules were found effective for the students.

After calculating the Reliability and Validity of Self-learning Modules, these were found ready to be administered for experimentation purpose. Ten Self-learning Modules on Business Management are given in Appendix II.
4.3 DEVELOPMENT OF LESSON PLANS FOR CONVENTIONAL MODE OF TEACHING

Every teacher who intends to teach something has to prepare an outline of his subject or topic in written form or at his cognitive level which is known as lesson planning. A teacher has to apply his theoretical knowledge in planning and administration of lesson plan. A practical outline of a topic to be taught in a period is called the lesson plan.

Lesson plan has originated from Gestalt psychology. The Gestalt theory of learning has a great influence on human learning. In the school, the whole is perceived by a part. A topic plays an important role in learning. The learner usually takes help of the topics in understanding and grasping the whole concept. The meaningful activities are related to one another within a topic. These activities provide the purposeful learning experiences and the learner understands the whole concept.

Nelson Bossing (1952) has defined Lesson Planning, “It is a statement of achievements to be realised and the specific means by which these are to be attained as a result of the activities engaged under the guidance of the teacher.”

I.K.Davies(1972) has given four steps for management of learning: planning, organizing, leading and controlling. He has also given the greater importance to lesson planning and consider it as the first step of planning of teaching. He defined in the following manner, “Lessons must be prepared for there is nothing so fatal to a teacher’s progress than un-preparedness.”

Binning and Bining(1988) were of the view that, “All lesson planning involves defining the objectives, selecting and arranging the subject-matter and determining the method and procedure.”

O'Bannon (2008) has explained, “A lesson plan is a teacher's detailed description of the course of instruction or 'learning trajectory' for a lesson. A daily lesson plan is developed by a teacher to guide class learning. Details vary depending on the
preference of the teacher, subject being covered and the needs of the students. There may be requirements mandated by the school system regarding the plan.”

Thus a lesson plan is the teacher’s guide for running a particular lesson and it includes the goal (what the students are supposed to learn), how the goal will be reached (the method and procedure) and a way of measuring how well the goal is reached (test, worksheet, homework etc.).

For planning and writing the lesson plans, various styles and approaches can be used such as The Herbartian Approach or Five Steps Approach (Herbart), Gloverian Approach (A.H.T. Glover), The Evaluation Approach (Dr. B.S.Bloom), Unit Approach or Morrisonian Approach (Morrison), The Project Approach (Kilpatrick) and RCEM Approach. A brief account of these approaches is given below:

1. **Herbartian Approach**

German Philosopher and educationist John Fedrick Herbart (1746-1841) developed a psychological procedure in the field of lesson planning. His approach indicates more towards teacher’s presentation rather than the student’s behaviour. Herbart proposed four steps:

   a) **Clearness**  
   b) **Association**  
   c) **System**  
   d) **Method**

These steps were further modified by Herbart as:

   a) **Preparation**
   
   In this step, previous knowledge is explored so that the students become motivated to gain new knowledge.

   b) **Presentation**
   
   In this step, the content is presented in an effective manner. Active participation of the students is an essential part of presentation.
c) Association or Comparison
This step is related with the task of strengthening the content presented in the second step. Teacher compares the previous knowledge with new knowledge and thus the students establish a link between them.

d) Generalisation
After comparison, students learn to simplify the content. Rules, principles, characteristics, objectives, importance and limitations etc. are drawn in this step.

e) Application
Students learn to apply the knowledge in similar situations.

f) Recapitulation
Teacher asks questions related to the content to check how much the students have understood.

2. RCEM Approach

This approach to lesson planning has been developed at Regional College of Education, Mysore. It is named as RCEM approach. This approach makes use of Systems Approach to education. The main steps involved in this approach are:

a) Input
In this step, the entry level behaviour of the students is examined. Instructional objectives are specified in behavioural terms.

b) Process
This step is concerned with the presentation of content matter. It corresponds to interaction process of the classroom. Activities of teacher and students are involved in this process.
c) Output
This is the evaluation phase of the lesson. Teacher uses various evaluation techniques to know the extent of achievement of instructional objectives.

3. Morrison or Unit Approach

This approach is associated with the name of the professor H. C. Morrison (1871-1945) of the University of Chicago. According to this approach, the teaching-learning process must result into the mastery of the content matter of a unit. The teacher moves to the second unit only when she thinks that the students have acquired mastery over the subject matter of the unit and are capable of generalising and applying the ideas of learned material.

Morrison proposed five steps:

a) Exploration
In this step, the teacher tries to know the students’ entry level behavior (previous knowledge).

b) Presentation
The overview of the subject matter is given and the structure of the whole unit is discussed with the students.

c) Assimilation
In this step, the students study the subject matter deeply and try to understand it.

d) Organisation
The students present the acquired knowledge in a systematic manner in written form.
e) Recitation
This step is related with the students verbal expression of the subject manner which is learned by them.

4. Gloverian Approach

This approach owes its origin and propagations to A. H. T. Glover. In his honour, it is named as Gloverian Approach. He disagreed with the teacher-centered approach and proposed a four-step learner-centered approach:

a) Questioning
Teacher or student asks question relating to a problem. Teacher presents the problem in such a manner so that the students become curious to know the answer.

b) Discussion
Various aspects related to question are discussed in the class and interaction becomes meaningful.

c) Investigation
Teacher acts as helping hand and guides the students so that the investigation becomes fruitful.

d) Expression or Pupil activity
Students present the result of their efforts and teacher guides further if required.

5. The Evaluation Approach

Bloom’s evaluation approach involves the following systematic steps of the lesson planning:
a) Formulation of Educational Objectives
Objectives specification is primary step in this approach. After formulating educational objectives, instructional objectives are specified in behavioural terms. This specification helps in identification of terminal behaviour.

b) Providing Learning Experiences
Relevant experiences are provided to students so that instructional objectives can be achieved. Teaching methods, techniques and aids are used as per the requirement of content matter.

c) Evaluation
In this step, the evaluation of terminal behaviour is carried out keeping in view the instructional objectives specified in advance.

6. Eclectic Approach for writing Lesson Plans

In this study, the steps followed to develop lesson plans are a mixture of Herbartian as well as RCEM approach. The basis of RCEM Approach is taken up from Bloom’s taxonomy of objectives. In this research, behavioural objectives were followed up according to RCEM approach whereas presentation of lesson plan was followed according to Herbartian Approach which is as follow:

1) Preparation
Well planned is said to be half done. This is the initial stage in which various activities are performed to arouse the interest of students. Previous knowledge of the students is tested and they become motivated to grasp new concept.

The following activities are involved in this step:

a) Introductory particulars indicating Pupil Teacher’s Name or Roll No, Date, Class, Section, Subject, Topic, Duration of Period etc.
b) Instructional Aids

Instructional Aids are the supporting material which assists in learning. These aids help in thorough understanding of the concepts.

Specific Aids - Charts, real objects, advertisements in newspapers etc. (as per requirement of lesson).

c) Instructional Objectives in Behavioural Terms

These were the behavioural outcomes which were tried to be achieved by the teacher by way of providing various learning experiences to students.

d) Previous Knowledge Assumed and Previous Knowledge Testing

i) Previous Knowledge Assumed

Pre-requisites for the new learning were mentioned in this step.

ii) Previous Knowledge Testing

In this step, the previous knowledge of the students was tested and a link was established between previous knowledge and new learning. Students were made curious to learn new things.

iii) Announcement of the Topic

After getting unsatisfactory or partial satisfactory or satisfactory response from the students, the topic was announced. After this, the name of the topic was written on the chalkboard.

2. Presentation

This step includes all the activities to be performed while teaching for attaining behavioural objectives. In the present study, presentation included four columns:

(i) Teaching Points
(ii) Teachers’ Activities
(iii) Students’ Activities
(iv) Chalk Board Work / Teaching Aids
3. Recapitulation
It was done to know the extent of learning of lesson by the students and to summarise the lesson. It was done after the presentation of lesson by asking questions (oral) from the students. Final recapitulation was done through the criterion referenced test at the end of every lesson.

4. Homework
Homework was given to the students at the end of lesson. They were asked to learn the content taught, write the questions, give suitable examples on their own and draw the diagrams.

Editing and Reviewing

Lesson Plans were also edited and reviewed in the same way as SLMs for Experimental group. Editing was done by experts in three phases:

(i) Editing by the Subject Matter Expert
(ii) Editing by the Expert in the field of Lesson Planning
(iii) Editing by the Language Expert

(i) Editing by the Subject Matter Expert

Subject matter expert checked the content to make sure that terminology used is correct, update information is provided and every important detail is assimilated. After getting the valuable suggestions by the concerned expert, necessary changes were incorporated in the Lesson Plans.

(ii) Editing by the Expert in the field of Lesson Planning

Concerned expert checked over the Lesson Plans to make sure that the material is well organised and the presentation is technically appropriate. Necessary changes were made as per the guidance provided by the expert.
(iii) Editing by the Language Expert

Language expert examined the material to make sure that the language used is technically correct and grammar rules have been followed. Required changes were incorporated as per the valuable suggestions obtained by the expert.

Tryout

The modified lesson plans were tried out on a group of 22 students of Bhagwan Parshuram College, Kurukshetra. Required modifications were made as per the need of the lesson.

Validity of Lesson Plans

At the end of every lesson, gain ratio was calculated to check the feasibility and effectiveness of lesson plans. It was calculated in the same manner as in case of Self-learning Modules.
Table 4.3

Gain Ratio of Ten Lesson Plans

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Lesson Plan</th>
<th>Pre-test mean score</th>
<th>Post-test mean score</th>
<th>Full Score</th>
<th>Gain Ratio</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Planning; Meaning and Types of Plans- (A) On the basis of Time (B) On the basis of Managerial Levels</td>
<td>1.23</td>
<td>11.5</td>
<td>15</td>
<td>.75</td>
<td>75</td>
</tr>
<tr>
<td>2.</td>
<td>Types of Plans on the basis of Use</td>
<td>.32</td>
<td>5.91</td>
<td>11</td>
<td>.52</td>
<td>52</td>
</tr>
<tr>
<td>3.</td>
<td>Organising; Concept and Types of Organisation Structure- Line Organisation Structure &amp; its Types, Line &amp; Staff Organisation Structure</td>
<td>.64</td>
<td>6.46</td>
<td>10</td>
<td>.62</td>
<td>62</td>
</tr>
<tr>
<td>4.</td>
<td>Functional Organisation Structure</td>
<td>1.36</td>
<td>12.23</td>
<td>14</td>
<td>.86</td>
<td>86</td>
</tr>
<tr>
<td>5.</td>
<td>Leadership; Meaning and Styles- Motivational Leadership Styles</td>
<td>1.27</td>
<td>10.64</td>
<td>13</td>
<td>.80</td>
<td>80</td>
</tr>
<tr>
<td>6.</td>
<td>Power Based Leadership Styles and Result Based Leadership Styles</td>
<td>1.27</td>
<td>11.14</td>
<td>13</td>
<td>.84</td>
<td>84</td>
</tr>
<tr>
<td>7.</td>
<td>Motivation; Meaning, Process and Theory of Motivation</td>
<td>1.05</td>
<td>6.32</td>
<td>10</td>
<td>.59</td>
<td>59</td>
</tr>
<tr>
<td>8.</td>
<td>Communication; Meaning, Process and Principles of Effective Communication</td>
<td>1.46</td>
<td>10.86</td>
<td>15</td>
<td>.70</td>
<td>70</td>
</tr>
<tr>
<td>9.</td>
<td>Communication Network</td>
<td>2.14</td>
<td>11.68</td>
<td>15</td>
<td>.74</td>
<td>74</td>
</tr>
<tr>
<td>10.</td>
<td>Controlling; Meaning and Process</td>
<td>1.77</td>
<td>7.55</td>
<td>11</td>
<td>.63</td>
<td>63</td>
</tr>
</tbody>
</table>

Gain Ratio of all the Lesson Plans was in the range of 0.52 to 0.86. It shows that gain ranges from 52% to 86%. Average gain of all lesson plans was 71%. It means the lesson plans were effective for the students. These lesson plans are given in Appendix III.

After Tryout and Validation of Lesson Plans, these were found ready to be administered for experimentation purpose.
4.4 COMPARISON OF VALIDITY OF SELF-LEARNING MODULES AND LESSON PLANS FOR CONVENTIONAL MODE OF TEACHING

One of the objective of the study was to compare the effectiveness of Self-learning Modules and Lesson Plans for Conventional mode of teaching. So, it was necessary to develop material for both the methods and establish the validity of the material.

Table 4.4

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Topic</th>
<th>Gain Ratio (Self Learning Modules)</th>
<th>Gain Ratio (Conventional mode of teaching)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Planning; Meaning and Types of Plans- (A) On the basis of Time (B) On the basis of Managerial Levels</td>
<td>.94</td>
<td>.75</td>
</tr>
<tr>
<td>2.</td>
<td>Types of Plans on the basis of Use</td>
<td>.82</td>
<td>.52</td>
</tr>
<tr>
<td>3.</td>
<td>Organising; Concept and Types of Organisation Structure- Line Organisation Structure &amp; its Types, Line &amp; Staff Organisation Structure</td>
<td>.89</td>
<td>.62</td>
</tr>
<tr>
<td>4.</td>
<td>Functional Organisation Structure</td>
<td>.93</td>
<td>.86</td>
</tr>
<tr>
<td>5.</td>
<td>Leadership; Meaning and Styles- Motivational Leadership Styles</td>
<td>.91</td>
<td>.80</td>
</tr>
<tr>
<td>6.</td>
<td>Power Based Leadership Styles and Result Based Leadership Styles</td>
<td>.98</td>
<td>.84</td>
</tr>
<tr>
<td>7.</td>
<td>Motivation; Meaning, Process and Theory of Motivation</td>
<td>.86</td>
<td>.59</td>
</tr>
<tr>
<td>8.</td>
<td>Communication; Meaning, Process and Principles of Effective Communication</td>
<td>.94</td>
<td>.70</td>
</tr>
<tr>
<td>9.</td>
<td>Communication Network</td>
<td>.86</td>
<td>.74</td>
</tr>
<tr>
<td>10.</td>
<td>Controlling; Meaning and Process</td>
<td>.88</td>
<td>.63</td>
</tr>
</tbody>
</table>

Gain Ratios for both the groups were compared and it was revealed that the gain of students learning through Self-learning Modules (average gain = .90 or 90%) was much more as compared to gain of students learning through conventional mode of teaching (average gain = .71 or 71%). Thus the Self-learning Modules were considered more effective as compared to conventional mode of teaching.