EFFECTIVENESS OF SELF LEARNING MODULES ON THE ACHIEVEMENT AND RETENTION OF UNDER GRADUATE STUDENTS IN COMMERCE

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By

KANCHAN

Under the guidance of

DR. NEELAM DHAMIJA

Assistant Professor (Retd.), Department of Education
Kurukshetra University, Kurukshetra

DEPARTMENT OF EDUCATION
KURUKSHETRA UNIVERSITY
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Learning is **not** the product of teaching.

Learning is the product of the **activity** of learners.

~ John Holt
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INTRODUCTION

NECESSITY IS THE MOTHER OF INVENTION

A learner is not a vessel to be filled, but a fire to be lighted. To illuminate this fire, lot of efforts are required on the part of teachers as well as learners. Effective communication leads to effective learning. All the learners are not identical. Their learning needs are also different depending upon their intelligence level. Individual differences are the main barriers in the way of communication with all types of learners. No communication strategy can satisfy every learner/student at the same time in the classroom situation. Experiences and theories of learning show that eliciting a response is an essential component of learning. Learning activities open up the genuine interaction between the learner and the material. It has given birth to an idea of developing Self Instructional Material. Teaching through self-learning material is catching attention throughout the world – in the developed as well as the developing countries.

Self Instructional Material can be developed in the form of Computer Assisted Instructions, Programmed Learning Material, Computer Based Instructions Self-learning Modules etc.

The benefits of Self Instructional Material are best described in terms of the type of learners for whom it is developed. The literature on Self Instructional Material asserts that self-directed learners demonstrate a greater awareness of their responsibility in making learning meaningful and monitoring themselves (Garrison, 1997). They are curious and willing to try new things (Lyman, 1997), view problems as challenges, desire change and enjoy learning (Taylor, 1995). Taylor (1995) also found them to be motivated and persistent, independent, self-disciplined, self-confident and goal-oriented.

Self Instructional Material allows learners to be more effective learners and social beings. Guthrie (1996) noted that the self-directed learners in a Concept-Oriented Reading Instruction (CORI) program demonstrated the ability to search for information in multiple texts, employed different strategies to achieve goals and represented ideas in different forms (drawing and writing). Morrow et. al. (1993) observed that with proper
planning and implementation, Self Instructional Material can encourage students to develop their own rules and leadership patterns. Students learn to accept responsibility. They gain the freedom to learn without restrictions. They retain more because they do the work themselves as compared to spoon feeding. Self instructional material provides the opportunity to develop a good work ethic. It seems to be a fun rather than being taught.

Self Instructional Material creates an effective learning environment for the learners to learn. These contain the answers of all possible queries, confusions and questions that may come in the mind of the learners at the time of learning. These also provide immediate feedback on the performance of the students. Intrinsic reward motivates them to learn more and more and maintains their interest in the self instructional material. These also help to maintain high interest level and sufficient motivation for the learners. Self Instructional Material has enriched features such as Self-explanatory, Self-contained, Self-directed, Self-motivating and Self-evaluating which help to cater to the needs of all types of learners.

This mode of education will continue to flourish in open distance education institutes/universities to meet a variety of educational needs of the ever increasing number of learners and fast changing societal conditions. Besides subject based teaching, much professional and industrial training is now imparted through self-learning packages. Such materials are needed for in-service education, life-long education etc. Self Instructional Materials are designed for both on site and distance learners to use at their own.

JUSTIFICATION OF THE STUDY

Formal Education will make you a living; self-education will make you a fortune. - Jim Rohn
It is said that whole life is a big schooling. One is never too old to learn. What is necessary is the willingness to learn. All knowledge is possible through the two eyes - curiosity and desire. Knowledge is like a vast, unfathomable ocean. Knowledge can be achieved either through formal education or through self-education.

Education may be liberal or it may be special. Now a days, there are three commonly known areas in higher education namely Arts, Commerce and Science. Young people are generally guided by lucrative aims. Their main desire is to earn money and become rich. Very few aspire for knowledge for the sake of knowledge which is the aim for the older generations. Business education offers good prospects for the ambitious persons. Many of them join Commerce colleges or take admission in Commerce with the aim of getting good jobs in different areas of trade.

Commerce is at the moment a promising area as a whole. In the present world, almost every human activity is related with economy whether in the shape of trade and industry or commerce and banking. Any concern which has transaction of money, a Commerce graduate has his footing there. Secondly, the related fields of Commerce are many and varied. In view of above stated facts, it may be said that Commerce graduates have somewhat better vision.

The understanding of Commerce depends upon the method of its presentation. For effective learning of Commerce, the method has to be suitable to the content. It depends on method only which makes a subject interesting and useful. Self-learning Modules help in making its presentation effective for successful teaching.

Albert Einstein said, “I never teach my pupils, I only provide the conditions in which they can learn.” Learning is a phenomenon which requires individual guidance, personal attention and overall individual efforts of the learners. Self-learning Modules may prove to be a boon for students due to their enriched features. They perform the role of an efficient teacher. Due to increased enrolment of students and knowledge explosion, the need of Self-learning Modules is the demand of the time. Along with it, knowledge through Self-learning Modules will also help to inculcate self-study habits and self-confidence among students which are very much essential for enhancing learning.

Researches conducted by Dhamija (1985), Chopra (1988), Greager and Murray (1991), Dutt (1998), Aggabao (2002), Rastogi (2003), Puri (2009) and Dhamija (2014) highlighted that the Self Learning Modules (SLM) are more effective as compared to
conventional mode of teaching. Not only this, the studies of Dhamija (1985), Puri (2009) and Dhamija (2014) showed that Self-learning Modules helped to increase the retention of students. In India, the development of Self-learning Modules is in its infancy stage and most of the researchers developed Self-learning Modules and found the effectiveness of Self-learning Module for school students. Very few researchers developed SLMs for Higher Education level. In order to find out the effectiveness of SLMs for higher education, the present venture is taken up. The students may excel in their related fields if they are provided Self-learning Modules for self-study purpose.

**STATEMENT OF THE PROBLEM**

EFFECTIVENESS OF SELF LEARNING SELF-LEARNING MODULES ON THE ACHIEVEMENT AND RETENTION OF UNDER GRADUATE STUDENTS IN COMMERCE

**OPERATIONAL DEFINITIONS OF THE TERMS**

**Effectiveness**

Oxford Advanced Learner’s Dictionary of Current English (2005) defined Effectiveness as a measure of attaining specified goals. In the proposed study, effectiveness is concerned with the achievement of students when taught through Self-learning Modules and Conventional Mode of Teaching.

**Self-learning Modules**

Ryan Manuel D. Guido (2014) defined a Self-learning Module as a self-contained, independent unit of a planned series of learning activities designed to help the student to accomplish certain well-defined objectives. The learner is able to proceed at his own rate and recycle if necessary. In the present study, Self-learning Modules are self-contained, self-paced and activity based instructional material where the students progress through the learning tasks at their own speed.
**Achievement**

Oxford Advanced Learner’s Dictionary of Current English (2005) defined Achievement as a thing that somebody has done successfully, especially using their own effort and skill. In the present study, achievement refers to the scores obtained by students on the criterion-referenced test after learning through Self-learning Modules and conventional teaching.

**Retention**

Oxford Advanced Learner’s Dictionary of Current English (2005) defined Retention as the ability to memorise things. It is the power of retaining, recalling and recognising what has been learned. In the present study, retention means students’ ability to retain the content after 7 days (Nathan et. al. 2007) of teaching through self learning Modules and conventional mode of teaching.

**Undergraduate Students**

Oxford Advanced Learner’s Dictionary of Current English (2005) defined Undergraduate students as those college students who are studying for their first degree. In the present study, undergraduate students are those students who are pursuing their first degree in Commerce.

**Commerce**

James Stephenson (2011) is of the view that Commerce embraces all those processes which help to break the barriers between producers and consumers. It is the sum total of those processes, which are engaged in the removal of hindrances of person (trade), place (transport and insurance) and time (warehousing) in the exchange (banking) of commodities.

Commerce is a stream taken by undergraduate students and it includes various subjects such as Business Management, Accountancy and Economics. In the present study Business Management branch of commerce is taken up. Business Management is a distinct process consisting of planning, organising, staffing, directing and controlling to get the work done in an efficient and effective manner.
OBJECTIVES OF THE STUDY

1. To develop and validate Self-learning Modules for undergraduate students in Business Management.

2. To develop and validate lesson plans for conventional mode of teaching for undergraduate students in Business Management.

3. To develop and validate the criterion referenced tests in Business Management to assess the achievement of students.

4. To develop and validate the retention tests in Business Management to assess the retention of students.

5. To compare the achievement of B.Com. 1st year students of experimental group and control group at pre-test stage.

6. To compare the effectiveness of Self-learning Modules and conventional mode of teaching (lesson plans) on the achievement of undergraduate students in Business Management at post-test stage.

7. To compare the retention level among undergraduate students in Business Management when taught through Self-learning Modules and conventional mode of teaching (lesson plans) at retention stage.

HYPOTHESES OF THE STUDY

1. There exists significant difference in the achievement of B.Com. 1st year students of experimental and control groups in Business Management at pre-test stage.

2. There exists significant difference in the achievement of B.Com. 1st year students of experimental and control groups in Business Management at post-test stage.

3. There exists significant difference in the achievement of B.Com. 1st year students of experimental and control groups at retention stage.
DELIMITATIONS

The study was delimited to

1. the students of B.Com. (1\textsuperscript{st} year) only.
2. only some topics of Business Management.
3. Kurukshetra district only.

METHOD AND PROCEDURE

DESIGN

In order to compare the effectiveness of two methods of teaching (i.e. Self-learning Modules and Conventional mode of teaching), the pre-test-post-test-control group experimental design was used which is given below in table:

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-test</th>
<th>Methods</th>
<th>Post Test</th>
<th>Retention Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group (EG)</td>
<td>Criterion Referenced Test (CRT)</td>
<td>Self-learning Modules</td>
<td>Criterion Referenced Test (CRT)</td>
<td>Retention Test (After seven days of teaching)</td>
</tr>
<tr>
<td>Control Group (CG)</td>
<td>Criterion Referenced Test (CRT)</td>
<td>Conventional Mode of Teaching</td>
<td>Criterion Referenced Test (CRT)</td>
<td>Retention Test (After seven days of teaching)</td>
</tr>
</tbody>
</table>

Experiment was conducted on 60 students of Dayanand Mahila Mahavidyalaya, Kurukshetra. Raven’s Intelligence Test was applied on these students. Two groups of 30 students each were formed. One group was designated as Experimental Group (EG) and the second group was designated as Control Group (CG). These two groups were matched on the basis of scores achieved by students on the Raven’s Intelligence Test. Experimental Group was exposed to Self-learning Module whereas Control Group was taught through Conventional Mode of Teaching. These students were tested on three
testing occasions to compare the effect of Self-learning Module and Conventional Mode of Teaching on the achievement and retention of students as shown in Figure:

![Diagram](image-url)

Total Students = 60, Sample Mortality = 9, Sample = 51 (i.e. 60-9)

<table>
<thead>
<tr>
<th>Group</th>
<th>Teaching Methods</th>
<th>EG (N=26)</th>
<th>CG (N=25)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Self-learning Modules</td>
<td>Conventional Mode of Teaching</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Testing Occasions</th>
<th>I</th>
<th>II</th>
<th>III</th>
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<tr>
<td></td>
<td>Pre-test stage</td>
<td>Post-test stage</td>
<td>Retention-test stage</td>
</tr>
<tr>
<td></td>
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<td>Post-test stage</td>
<td>Retention-test stage</td>
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<tr>
<th>Tools Used</th>
<th>C.R.T.</th>
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<th>Retention Test</th>
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<tr>
<th>Measurement</th>
<th>Achievement at Entry Level</th>
<th>Achievement After Teaching</th>
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</table>

**Design of the Study**
SAMPLE

The present research was carried out in two phases. In first phase, teaching learning material was developed both for Self-learning Modules and Conventional Mode of Teaching. In the second phase, experiment was conducted on a sample of 60 students.

TOOLS USED

In the present study, two types of tools were used.

1. Instructional Tools

The instructional tools were used to impart instructional material to the students through self-learning modules and lesson-plans.

In this study, the following instructional tools were developed:

a) Self-learning Modules:

Self-learning modules were self-instructional, self-paced and having specific steps ranging from Objectives to Evaluation. These Self-learning Modules were developed on the ten topics of Business Management of B. Com. (1st year).

The self-learning modules were developed in the form of Booklets. Each booklet consisted of subject matter of one topic of Business Management.

b) Lesson Plans

Lesson Plans were prepared by the researcher for teaching various topics to students. Ten lesson plans were developed on all the ten topics for which Self-learning Modules were developed. These were developed by mixing Herbartian and RCEM approach. This mixed approach is used these days for the development of lesson plans under the conventional mode of teaching.

2. Measuring Tools

Measuring Tools were used to measure the intelligence level, achievement and retention of students. In this study, the following measuring tools were used:

a) Raven’s Standard Progressive Matrices

Raven’s Standard Progressive Matrices (2005) was used to assess the intelligence level of students for making two similar groups. This test was developed by J. C. Raven in 1958
and again confirmed the reliability and validity of this test in 2005. It evaluates the
general intelligence of young and aged persons. It is a test of a person’s capacity at the
time of the test to apprehend meaningless figures presented for his observation, see the
relations between them, conceive the nature of the figure completing each system of
relations presented, and, by doing so, develop a systematic method of reasoning. The
scale consists of 60 problems divided into 5 sets of 12 each. In each set the first problem
is as nearly as possible self-evident. The problems which follow become progressively
more difficult. The order of the items provides the standard training in the method of
working. The five sets provide five opportunities for grasping the method and five
progressive assessments of a person’s capacity for intellectual activity. To ensure
sustained interest and freedom from fatigue, the figures in each problem are boldly
presented, accurately drawn and, as far as possible, pleasing to look at. The scale has a
test-retest reliability varying with age from 0.83 to 0.93.

b) Criterion Referenced Tests (CRTs)

In this experimental research, ten criterion-referenced tests were developed and used to
assess the entry level behaviour of the students. These were also used for assessing the
achievement level of students after completing each topic. The items in these were of
various types such as fill-ups, classify the types, draw the diagrams and short answer
type. Reliability and Validity of Criterion Referenced Tests are found and the details are
given in chapter 5.

c) Retention Tests

Retention Tests were used to assess the retention level of students after 7 days of
teaching each topic. In this study, ten retention tests were developed on parallel lines of
the criterion referenced tests. The items in these were of various types such as fill-ups,
classify the types, draw the diagrams and short answer types. In each topic, scoring was
based on items. The scores of all ten retention tests were added. In this way, the
maximum score of all ten topics was 127 while the minimum score was zero. Retention
Tests are given in Appendix- V. Reliability and Validity of Retention Tests are found and
these are given in chapter 5.
PROCEDURE

Following was the procedure of this study:

(i) Selection of the Students for Experimentation

In this study, Dayanand Mahila Mahavidyalaya, Kurukshetra was selected using Purposive Sampling. There were 60 students in B.Com. 1st year. All the students form the sample of the study.

(ii) Administration of the Intelligence Test and Random Selection of the Subjects

Firstly, the researcher administered Raven’s Standard Progressive Matrices on all B. Com. 1st year students. On the basis of the scores obtained on Raven’s Standard Progressive Matrices, 60 students were classified on the basis of high, middle and low level intelligence. Then all these three groups namely high level intelligence group, middle level intelligence group and low level intelligence group were further divided in two groups on the basis of random selection. In this way, two groups of students were made having equal no. of students of high, average and low level of intelligence. One group was named as experimental group and the other was named as control group.

(iii) Assigning Methods of Teaching to the Groups

The two groups of students were assigned particular method of teaching. One group was taught through Self-learning Modules and other was taught through Conventional Mode of Teaching.

(iv) Experimentation

The experiment was conducted under three phases as

(a) Pre-test Phase

This was the first phase. Before exposing to the teaching learning material, both experimental and control groups were pre-tested with criterion referenced test on each topic in Business Management. After this, the students of the experimental group were provided with directions about the use of Self-learning Modules. Similarly, rapport was established with the control group students for smooth functioning of the work to be carried out.
(b) Post-test Phase

The second phase of the experiment was concerned with the handling of the experiment. During this phase, the experimental group was exposed to Self-learning Modules and the control group was taught through the Conventional Mode of Teaching. The experiment was conducted in the July to August.

At the end of each topic, both the experimental and control groups were given criterion referenced test to evaluate their achievement level. The scores achieved on criterion referenced tests were termed as post-test scores. Then the scores of criterion referenced tests were compared in order to assess the effectiveness of two methods of teaching.

(c) Retention-test Phase

The third phase was the retention test phase where the retention level of students of both the groups was measured. After a period of seven days, retention test was administered after finishing each topic. Scores obtained by both the groups were termed as retention test scores. These scores were compared to know the retention level of students of both the experimental group and control group.

3.6 DATA COLLECTION

Data collection is critical part of the research process. On the basis of data collection, hypotheses are identified as valid, verified as correct or rejected as unattainable. Data were collected at three different stages:

(i) Stage I (Before Experiment)

Before the experiment, the criterion referenced test was administered on the students of both groups i.e. experimental and control group. The scores obtained were termed as pre-test scores.

(ii) Stage II (Immediately after Teaching a Particular Topic)

Immediately after teaching a particular topic, the criterion referenced test was again administered on the students of both groups. The scores obtained were termed as post-test scores.
(iii) Stage III (After 7 days of Teaching a Particular Topic)

Retention test was administered after 7 days of teaching a particular topic in both the groups. The scores obtained were termed as retention scores.

STATISTICAL TECHNIQUES USED

Keeping in view the objectives as well as the design of the study, the following statistical techniques were applied to analyse the data:

(a) Error rate and Gain ratio were calculated to find out the reliability and validity of Self-learning Modules and Lesson Plans.

(b) t-test was used to compare the effectiveness of Self-Learning Modules and Conventional Mode of Teaching.

MAIN FINDINGS

The present study was aimed to find out the “Effectiveness of Self-learning Modules on the Achievement and Retention of Under Graduate Students in Commerce.” Following findings have been revealed after the detailed analysis of data:

1. Instructional Material in the form of Self-learning Modules was developed for B.Com.1st year students in the subject Business Management. The Self-learning Modules were evaluated by calculating Error Rate and Gain Ratio to find out the Reliability and Validity.

- Error Rate of all 10 Self-learning Modules was found in the range of 1.34% to 18.18% which was less than twenty percent. The error rate in following topics was: Planning; Meaning and Types of Plans on the basis of Time and Managerial Levels (4.93%), Types of Plans on the basis of Use (18.18%), Organising; Concept and Types of Organisation Structure- Line Organisation Structure & its Types, Line & Staff Organisation Structure (10%), Functional Organisation Structure (5.90%), Leadership; Meaning and Styles-Motivational Leadership Styles (8.03%), Power Based Leadership Styles and Result Based Leadership Styles (1.34%), Motivation; Meaning, Process and Theory of Motivation (11.30%), Communication; Meaning, Process and Principles of Effective Communication (5.22%), Communication Network (10.43%), Controlling; Meaning and Process (10.28%). It means 82% students responded correctly on 82% items of CRTs of
Self-learning Modules which shows that the Self-learning Modules were quite understandable for the students. Thus, the Self-learning Modules were found reliable for use during experimentation.

- Gain Ratio of all the Self-learning Modules of Business management was in the range of 0.82 to 0.98. Gain Ratio was calculated and was as follows: Planning; Meaning and Types of Plans on the basis of Time and Managerial Levels (0.94), Types of Plans on the basis of Use (0.82), Organising; Concept and Types of Organisation Structure- Line Organisation Structure & its Types, Line & Staff Organisation Structure (0.89), Functional Organisation Structure (0.93), Leadership; Meaning and Styles- Motivational Leadership Styles (0.91), Power Based Leadership Styles and Result Based Leadership Styles (0.98), Motivation; Meaning, Process and Theory of Motivation (0.86), Communication; Meaning, Process and Principles of Effective Communication (0.94), Communication Network (0.86), Controlling; Meaning and Process (0.88). Thus, the Self-learning Modules were found valid and ready for experimentation.

2. The instructional material was also developed in the form of Lesson Plans for Conventional mode of teaching. Lesson Plans were validated in terms of Gain Ratio. Gain Ratio of all the Lesson Plans was in the range of 0.52 to 0.86. Gain Ratio was as follows: Planning; Meaning and Types of Plans on the basis of Time and Managerial Levels (0.75), Types of Plans on the basis of Use (0.52), Organising; Concept and Types of Organisation Structure- Line Organisation Structure & its Types, Line & Staff Organisation Structure (0.62), Functional Organisation Structure (0.86), Leadership; Meaning and Styles- Motivational Leadership Styles (0.80), Power Based Leadership Styles and Result Based Leadership Styles (0.84), Motivation; Meaning, Process and Theory of Motivation (0.59), Communication; Meaning, Process and Principles of Effective Communication (0.70), Communication Network (0.74), Controlling; Meaning and Process (0.63). Thus, the Self-learning Modules were found valid and ready for experimentation.

3. After developing the instructional material for both teaching methods, there was requirement of the development of the measuring tools to measure the change in behaviour of students of B. Com. 1st year in the subject Business Management. It was measured in terms of the achievement scores on the Criterion Referenced Tests. One CRT was developed for each topic of instructional material. The value of Kappa ‘K’ was
found out to check the reliability of CRTs. The CRTs were also evaluated in terms of content validity.

- The reliability of the developed CRTs was checked by using Test-retest method. The Kappa ‘K’ of various units was:
  - Planning; Meaning and Types of Plans on the basis of Time and Managerial Levels (0.70),
  - Types of Plans on the basis of Use (0.72),
  - Organising; Concept and Types of Organisation Structure- Line Organisation Structure & its Types, Line & Staff Organisation Structure (0.68),
  - Functional Organisation Structure (0.75),
  - Leadership; Meaning and Styles- Motivational Leadership Styles (0.77),
  - Power Based Leadership Styles and Result Based Leadership Styles (0.64),
  - Motivation; Meaning, Process and Theory of Motivation (0.72),
  - Communication; Meaning, Process and Principles of Effective Communication (0.70),
  - Communication Network (0.86),
  - Controlling; Meaning and Process (0.80). The calculated values of K for ten units of Business Management ranged from 0.64 to 0.86. These values were considered to be satisfactory as all these were in the range of Substantial and Almost Perfect in terms of intensity of agreement (Landis and Koch, 1977). Thus the developed CRTs for all the units of Business Management were found reliable to carry out the experiment.

- The validity of the developed CRTs for the ten units i.e., Planning; Meaning and Types of Plans on the basis of Time and Managerial Levels, Types of Plans on the basis of Use, Organising; Concept and Types of Organisation Structure- Line Organisation Structure & its Types, Line & Staff Organisation Structure, Functional Organisation Structure, Leadership; Meaning and Styles- Motivational Leadership Styles, Power Based Leadership Styles and Result Based Leadership Styles, Motivation; Meaning, Process and Theory of Motivation, Communication; Meaning, Process and Principles of Effective Communication, Communication Network, Controlling; Meaning and Process was evaluated in terms of the content validity. The content validity of each Criterion Referenced Test was ascertained by the researcher herself by analysing the test items and the concerned behavioural objectives. For determining the content validity of all ten criterion referenced tests, help was also taken from subject matter expert. After getting the valuable suggestions from the concerned expert, necessary changes were incorporated. After this, the tests were found to be valid tools in terms of the content validity.

4. To measure the effect of Self-learning Modules and Conventional Mode of Teaching on the retention of students, there was need of retention tests. Retention tests were
developed on the same pattern as the CRTs for all the ten topics were developed. Thus, the retention tests were also evaluated in terms of reliability as well as validity.

- The reliability of the retention tests was calculated by applying Test-retest method. The values calculated for ‘K’ were: Planning; Meaning and Types of Plans on the basis of Time and Managerial Levels (0.87), Types of Plans on the basis of Use (0.73), Organising; Concept and Types of Organisation Structure- Line Organisation Structure & its Types, Line & Staff Organisation Structure (0.71), Functional Organisation Structure (0.78), Leadership; Meaning and Styles- Motivational Leadership Styles (0.70), Power Based Leadership Styles and Result Based Leadership Styles (0.78), Motivation; Meaning, Process and Theory of Motivation (0.73), Communication; Meaning, Process and Principles of Effective Communication (0.88), Communication Network (0.70), Controlling; Meaning and Process (0.70). The calculated values of K for ten topics of the subject Business Management ranged from 0.70 to 0.88. Thus, all the developed retention tests were found to be reliable on the basis of the criteria adopted in the CRTs developed for all the specified ten topics of the subject Business Management.

- The content validity of the developed ten retention tests was also maintained on the basis of same procedure followed in the CRTs. It was done by the researcher and subject matter expert by matching the items with the selected content area and instructional objectives. After this, the retention tests were found to be valid tools in terms of the content validity.

5. The main findings of this experimental study highlighted that both experimental as well as control groups were matched on the basis of intelligence test. Then both groups were pre-tested on Criterion Referenced Test. The results were obtained by applying t-test. t-value for all the ten topics were: Planning; Meaning and Types of Plans- (A) On the basis of Time and Managerial Levels (0.75), Types of Plans on the basis of Use (-1.24), Organising; Concept and Types of Organisation Structure- Line Organisation Structure & its Types, Line & Staff Organisation Structure (-1.11), Functional Organisation Structure (-1.23), Leadership; Meaning and Styles- Motivational Leadership Styles (-1.72), Power Based Leadership Styles and Result Based Leadership Styles (-0.02), Motivation; Meaning, Process and Theory of Motivation (-1.57), Communication; Meaning, Process and Principles of Effective Communication (0.23), Communication Network (1.91), Controlling; Meaning and Process (-0.91). The obtained t-values were not significant at 0.01 level of significance. t-values highlighted that no significant
difference was found between the experimental and control groups. Thus, the students of both the groups were having similar behaviour before going for experimentation and the first hypothesis is rejected that there exists significant difference in the achievement of B.Com. 1st year students of experimental and control groups in Business Management at pre-test stage.

6. Another finding of the study indicated that the achievement of B.Com. 1st year students of experimental group was significantly better than that of the control group on post-test. t-values for all the ten topics were: Planning; Meaning and Types of Plans on the basis of Time and Managerial Levels (3.24), Types of Plans on the basis of Use (3.28), Organising; Concept and Types of Organisation Structure- Line Organisation Structure & its Types, Line & Staff Organisation Structure (3.88), Functional Organisation Structure (3.99), Leadership; Meaning and Styles- Motivational Leadership Styles (4.78), Power Based Leadership Styles and Result Based Leadership Styles (4.26), Motivation; Meaning, Process and Theory of Motivation (2.75), Communication; Meaning, Process and Principles of Effective Communication (3.29), Communication Network (3.80), Controlling; Meaning and Process (3.36). These t-ratios were significant at 0.01 level of significance. All of these values highlighted that there was significant mean difference in all the ten topics for experimental group and control group. Thus, it showed that Self-learning Modules proved effective as compared to Conventional mode of teaching. Hence the obtained results are in favour of the second hypothesis where the significant difference between the experimental group and control group was found. Thus the second hypothesis is accepted that there exists significant difference in the achievement of B.Com. 1st year students of experimental and control groups in Business Management at post-test stage.

Above finding was supported by the experiment conducted by Dhamija (1985). In this research, the researcher compared the effectiveness of the three approaches of teaching namely Conventional, Radio-vision and Modular on the achievement of students in social studies. The mean achievement scores of students in Civics when taught through Modular approach were more than the mean achievement scores of students when taught through Radio-vision as well as Conventional approach.

7. Another finding of the study indicated that the students of experimental group retained more than the students of the control group. t-values for all the ten topics were: Planning; Meaning and Types of Plans- (A) On the basis of Time (B) On the basis of Managerial Levels (3.01), Types of Plans on the basis of Use (3.27), Organising; Concept and Types
of Organisation Structure- Line Organisation Structure & its Types, Line & Staff Organisation Structure (3.69), Functional Organisation Structure (3.35), Leadership; Meaning and Styles- Motivational Leadership Styles (2.98), Power Based Leadership Styles and Result Based Leadership Styles (2.99), Motivation; Meaning, Process and Theory of Motivation (3.67), Communication; Meaning, Process and Principles of Effective Communication (2.74), Communication Network (3.04), Controlling; Meaning and Process (3.41). These t-ratios were significant at 0.01 level of significance. Thus the third hypothesis is accepted that the students exposed to Self-learning Modules retained higher scores in all the Self-learning Modules of Business Management than those exposed to conventional mode of teaching.

Similar finding was experienced by Puri (2009) where the researcher compared the retention after Self-learning Modules and Conventional Teaching.

**EDUCATIONAL IMPLICATIONS**

The findings of the study suggest educational implications for the teachers, teacher educators, curriculum planners and administrators.

This experimental study aimed at developing Self-learning Modules and Lesson Plans for teachers. The reliability and validity of these were established for conducting the experiment. So, the needful training should be arranged for the pre-service and in-service teachers for developing Self-learning Modules and Lesson Plans for different levels of education. There is also a need to orient the teachers for developing positive attitude towards the use of Self-learning Modules in their teaching-learning process.

One of the finding of the study indicates that Self-learning Modules proved effective for learning the selected topics of Business Management among undergraduate students. This finding has its implications for teachers, teacher educators and administrators. The teacher educators should motivate the teachers to prepare and utilise the Self-learning Modules for Business Management as well as for other subjects of Commerce. The use of Self-learning Modules will certainly reduce the teaching burden of teachers. Along with it, it will provide opportunity to the students to learn the content at their own pace. The administrators should also arrange the training courses for teachers during summer and winter vacations. Another finding of the study highlights that the students exposed to Self-learning Modules retained higher scores than those students exposed to Conventional Mode of Teaching. The teacher educators and administrators should support the teachers for developing Self-learning Modules in their area of specialisation.
Self-learning Modules not only increase the level of achievement but also help in retaining the content for longer time. It is because of interaction of students with the Self-learning Module. Along with it, Self-learning Modules increase self-confidence in the students because these provide immediate feedback to the students during learning process. Along with it, the process of self evaluation helps the students to do revision again and again which is helpful in retaining the content for longer time. Self-learning Modules undoubtedly make the students active, interactive and independent learners during the process of learning.

**SUGGESTIONS FOR FURTHER RESEARCHES**

1. Self-learning Modules can be developed in the subjects Accountancy, Statistics, Income Tax etc. and can be compared with Conventional mode of teaching.
2. A study can be conducted to find out the attitude of teachers regarding the use of Self-learning Modules.
3. A study can be undertaken to explore the attitude of students regarding the use of Self-learning Modules.
4. An experimental study can be designed to find out the effectiveness of Multi-media Modules for different areas of Commerce.
5. This type of study can be conducted on secondary and senior secondary level in different areas.