Influence of Metacognition Integrated Learning Package on the Academic Achievement of B.Ed. trainee teachers

Rishi Kumar[1]
Gurkirat Kaur[2]

Abstract:

This study was conducted on 100 B.Ed. trainee teachers to find out the influence of Metacognition Integrated Multimedia Learning Package (MIMLP) on the Academic Achievement. The investigator hypothesized that the achievement in Educational Psychology of B.Ed. trainees taught using Metacognition Integrated Learning Package (MILP) will significantly be higher than that of those who will be taught through the Present Method of Teaching. The results showed that there is a significant mean difference in the achievement between the male and female students of B.Ed.

I. INTRODUCTION

Teacher education has an important place in the system of education. In the modern competitive and technological changing environment, education of the child in a society becomes very important. Every nation on this earth now trying to be the best in the world, but this cannot be done without the help of teacher educators. Teachers in the present scenario have a responsibility of enriching the student with current and latest information through effective instructional strategies. The role of teacher is to plan for systematic instruction and provides learning experiences which are basic for effective and dynamic development of the child, so the teacher must have knowledge about the current technology used in the field of education through which cognition of students can be developed. For proper cognitive development, it is important to understand the thinking process of the child. The most of the educational and psychological theories laid emphasis on learner's awareness for the cognitive process. So a teacher educator must be aware of cognitive process. In simple words, we can call this metacognition. Metacognition is just thinking about thinking.

The conventional teaching methods are not sufficient to arouse interest in learning among the students and do not meet up to the intellectual, psychological and emotional needs of the students. The methods of teaching need to be changed. The modern teaching concept holds the view that it is more learner centered and learner driven. Education has been undergoing a slow evolution; from teacher centered system to a learner- centered system, and this demands changes in the instructional process and materials used for making the process more effective. In the teaching-learning process, learner is to be active and learning should effect desirable changes in behaviour, in habits, style of living, adjustment of knowledge, skills etc. It aims at maximizing learning experience (Kumar, 2011).

Computer in education can create a new environment in the teaching learning process. It helps the children to acquire new skills, which help them to be efficient in the international world of science and education. Computer helps children to become less dependent on the teacher. It lessens the memorizing work and increases more information handling and problem solving capabilities. It encourages collaborative learning rather than competing with other children. Computer as an educational aid improves learner's skills in the academic subjects at all levels of education. Nowadays there has been a major growth In the application and use of computer multimedia resources in learning. Multimedia, defined as a combination of some or all of the elements of text, graphics, animation, sound and video using a computerized platform is becoming more widely recognized as an effective enhancement mechanism for education, in concert with the continual expansion of the technological arena (Baron and Orwig, 1995). The visual spatial learning methodology is of great importance to many learners and the relative ease with which education professionals can now create and utilize multimedia files has opened the door for extensive development and investigation (Gardener, 1983). Multimedia technology has many applications in the classroom. Integrating multimedia technologies into educational thematic units seems to be a solution to the problem of student motivation and involvement in subject that is relative to their own interactions with society.

A learning package is a collection of instructional material designed for specific learning outcomes. The design is guided by the instructional objectives designed for the course curriculum. The package helps the teacher to obtain desired learning outcomes in students and helps the students to achieve the learning outcomes. In the present study, the investigator prepared a Metacognition Integrated Multimedia Learning Package (MIMLP) to enhance the academic achievement of the B.Ed. trainee teachers.

II. REVIEW OF LITERATURE

Ranade (2004) found out the effectiveness and critical evaluation of a computer Assisted Instructional Package

[1]School of Education, Desh Bhagat University, Mandi Gobindgarh, Punjab, E.mail: vermarishi69@gmail.com
[2]School of Education, Desh Bhagat University, Mandi Gobindgarh, Punjab

developed for teacher educators. The major findings were-since information on Multiple Intelligence is not readily available in book, the content of the presentation was ve:ry useful and those teachers who have almost totally computer illiterate, felt motivated to learn computers after seeing their usefulness in teaching- learning.

Benjamin & Sivakumar (2007) In their article "Multimedia enhances effective self - learning" emphasized the need and importance of learning through multimedia CD-based self learning, and dwells on the quality as well as quantity of teaching and learning bringing forth the need and significance of learning science through self -learning with the help of multimedia CD-based courseware.

Reddy et al (2009) found out the effectiveness of Multimedia based modular instruction on the achievement in science of the problem students. Two matched groups of problem students were constituted for the experiment. The control group problem students were given routine treatment during the school hours. The experimental group problem students were subjected to Multimedia based modular instructional strategy for a period of three months. The obtained results established the effectiveness of Multimedia based modular instruction on the achievement m science of the problem students.

Anboucarassy (2010) was undertaken a study to find out the Effectiveness of Multimedia in teaching Biological science to IX standard students. The study revealed that there was a significant difference in the achievement of the experimental group and control group. The multimedia helped the students in experimental group to sustain their interest and also their retention power compared to the traditional method of teaching.

Ercan (2014) implemented multimedia learning material developed for the 5th grade science course topic "Food and Healthy Nutrition" and examined its effect on students' academic achievement and science attitudes. The study used a control group, a pre-test-post-test quasi experimental research design, and a convenience sample consisting of 62 5th grade students. The research instruments were an achievement test and a science attitude scale. During the implementation process the experiment group learned using multimedia learning material and the control group learned with traditional methods. Data were analyzed using an independent-samples t test, a paired-samples t-test, and AN-COVA statistics. According to the findings there is a statically significant difference between post-test achievement scores of the experimental and control groups, with the experimental group scoring higher. Also there is a statically significant difference between students' post-test scores in terms of gender, favoring females over males. In terms of science attitude there is also a significant difference between post-test scores of the experimental and control groups. This study showed that multimedia learning promotes more effective learning in science education.

Kaur and her coworkers (2015) found that the multimedia package prepared by researcher for teaching English was more effective for academic achievement of class 8th students in English.

Objectives of the study

To study the academic achievement of B.Ed. trainee teachers after Metacognition Integrated Multimedia Learning Package (MIMLP).

Hypothesis

The achievement in Educational Psychology of B.Ed. trainees taught using Metacognition Integrated Learning Package (MILP) will significantly be higher than that of those who will be taught through the Present Method of Teaching.

III. METHODOLOGY

The present study aimed to develop a Metacognition Integrated Multimedia Learning Package (MIMLP) for B.Ed. trainee teachers. The necessary data for the study was collected through survey method as well as experimental method Normative survey method was used by the investigator to find out the existing level of metacognitive awareness of B.Ed. trainee teachers. The analysis of the data reflected that the metacognitive awareness of B.Ed. trainee teachers is at a lower level. This prompted the investigator to go to the next part of the study.

Sample

A sample of 100 B.Ed. trainee teachers was selected from the Desh Bhagat University, Mandi Gobindgarh, Punjab. Stratified random sampling technique was adopted by giving due representation to gender. The gender wise distribution of the sample was 15 males and 85 females.

Tools Used

Metacognition Integrated Learning Package (MILP)

The investigator decided to integrate the metacognitive knowledge aspects and the metacognitive regulation aspects in the multimedia learning package to improve the quality of the teaching learning process. For this, the investigator made a thorough review of the related literature and also consulted various experts and education psychology teachers. The metacognitive aspects were carefully embedded in the learning package. The learning package consists of about 200 slides with three video presentations on the topic learning.

Achievement Test

Academic achievement is the performance of the pupil's accomplishment in a subject of study. Academic achievement is important to assess the progress made by the individual in whole educational programme. The investigator self prepared the achievement test. The topics selected for preparing the achievement test were- brief overview of learning, laws and domains of learning, factors affecting leaning, classical conditioning, operant conditioning, learning insight and trial and error theories. The achievement test consists of 62 questions in the draft which was reduced to the 50 questions in the final form of the test. The rejected questions were selected on the basis of the Difficulty Index and Discriminating power. The difficulty index less than 0.25 or more than 0.75 and discriminating power less than 0.03, were rejected from the draft of the Achievement test.

Scoring procedure

For each question, four to five choices were given. Two marks were given to each correct answer.

Administration of the draft test

From Desh Bhagat University, Mandi Gobindgarh, 100 B.Ed. trainee teachers were selected for administering the draft test. The question papers were distributed to the students after giving clear instructions. More than 90°/o of the students completed the test in 40 minutes. The response sheets were collected, scored and analysed by means of item analysis.

Item Analysis

Item analysis was done using the method suggested by Ebel and Friesbie (1991). The response sheets of students were scored. 50 response sheets were obtained for analysis. The response sheets of 50 B.Ed. trainees were arranged in the descending order of their total scores where there are ties, students getting high scores in the first few items were put at the top. The number of subjects marking the correct answer for an item in the high achieving group (U) and low achieving group (L) were counted and thus calculated the difficulty index and discriminating power.

a) Difficulty index

The difficulty index of each item was calculated using the formula.

D.I = U+L/2N

b) Discriminating power

The discriminating power of the items was calculated using the formula.

D.P = U-L/N

Items having difficulty index between 0.25 and 0.75 and discriminating power above 0.3 were selected for the final test. The draft form of achievement test and difficulty index and discriminating power of the items in the achievement test.

Validity test of achievement test

The statistical validity of the test was established by correlating the test scores with qualifying examination marks. The validity coefficient was computed by Pearson product moment method and has got validity r=0.91 when calculated on a sample of 100 students.

IV. RESULTS AND DISCUSSION

The difference in achievement of B. Ed. trainees taught using Metacognition Integrated Multimedia Learning Package (MIMLP) that of those who will be taught through the Present Method of Teaching are given in table 1

Table 1: Mean Score of Achievement Test

Groups	Number	Average
Post Test Experiment Group Male	8	72.25
Post Test Experiment Group Female	42	76.14
Post Test Control Group Male	7	70.28
Post Test Control Group Female	43	70.97

Table 1 depicts the difference in the achievement test of control group of males (70.28) with the experimental group of males (72.25) and same for the female groups (control 70.97; Experimental 76.14). The results showed achievement test scores of the B.Ed. trainee teachers was increased in the post test after teaching them through Metacognition Integrated Multimedia Package (MIMLP).

Figure 1 clearly demonstrates the difference in the achievement test in male and female control and experimental groups. This figure showed the significance of MIMLP in contrast to the present methods of teaching to the students. The figure also describes that the academic achievement scores of females were more improved than the males after being taught by the MIMLP.

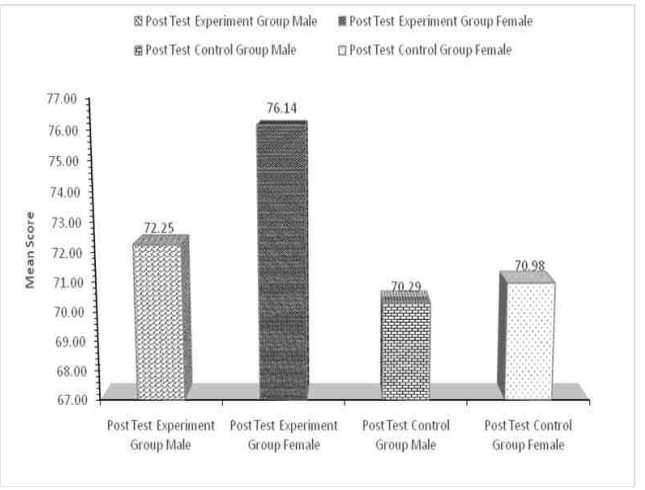

Figure 1: Post-test Male & Female mean score in the Achievement test of B. Ed. trainees in Experiment and Control Group

Table 2 describes the ANOVA test among and between groups of male and females in the achievement test of the B.Ed. trainee teachers. The F value was observed as 2.83 at p 0.05 level. These results showed significant differences in the achievement of the male and female students after being taught by the MIMLP.

Table 2: Post-test Difference in Male & Female score in the Achievement test of B. Ed. trainees in Experiment and Control Group

ANOVA at .05 level						
Source of Variation	SS	df	MS	F	P-value	F critical
Between Groups	549.0892	3	183.0297	2.832592	0.04235	2.699393
Within Groups	6203.101	96	64.61563			
Total	6752.19	99				

V. CONCLUSION

Computer based video technologies are more powerful and versatile than what preceded them and much more widely available in schools than are earlier technologies. Now a day's there has been a growing urge for the application and use of multimedia resources in schools to make learning more efficient and effective. Metacognition is defined as an awareness of our thinking as we perform specific tasks, and using this awareness to control what we are doing. Metacognitive strategies are very essential to achieve success in any learning and to acquire higher thinking skills.

The study examined the effect of MIMLP on the achievement of the B.Ed. trainee teachers. The investigator decided to

prepare a Metacognition Integrated Multimedia Learning Package (MIMLP) in order to improve the metacognitive ability as well as achievement in the subject matter. Studies revealed that the male and female students achievement test positively affected by the MIMLP. Also, female's achievement scores was found to be more improved as compared to the males. Hence the effectiveness of prepared package was found with respect to the academic achievement.

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