Research Article

Effectiveness of Computer Based Instructional Package in Terms of Achievement in Educational Psychology

Sarita Chaudhary
Assistant Professor, School of Education,
Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Wardha,
E-mail: saritashireesh@gmail.com)

Abstract

This is technological era in which every facet of life has been transformed by computer technology. Education too, has not remained untouched by the advent of modern ICT. A whole new spectrum of ICT based technologies have thrown up many new innovations in teaching and learning such as use of open resources, digital lectures, educational software, blogging, social media etc. Learning based on books and lectures by teachers is now being blended with innovative methods of teaching learning based on ICT. Education remains no more confined to black board, chalk, and teachers talk but various new inventions like computer multimedia have become integral part of modern educational system. The use of computers, multimedia, simulation, and audio/video presentations makes education live and vibrant by involvement of learner's multiple senses in the process of learning. Computer based Educational technology has many advantages over the conventional system of instructional delivery in teaching learning process. In the present research, Investigator developed Computer Based Instructional Package in Educational Psychology and assess the effectiveness of package in terms of achievement of pupil teachers in educational psychology. Achievement is also compared on the basis of gender & Intelligence of prospective teachers.

Key Words: CBI package, Achievement, Educational Psychology.

Introduction

Technology is an integral part of our day to day life. Today it affects every part of our life from shoe making to making indigenous aircraft career like Vikrant. The concept of technology in education was dreamt many centuries ago when, Plato prophesised that someday in the distant future our grand children will develop a new equivalent of our class rooms. They will spend many hours in front of boxes with fires glowing within. They may have the wisdom to know the difference between light & knowledge? The dream of Plato comes true with the invention of computers and other related inventions in the field of education. Students now spent hours sitting before electronic device called computer and use it to convert, store,

protect, process, transmit and securely retrieve information. Thus, new era of education through technology has started in which technology and education are going together hand in hand.

Information and communication technologies have become one of the major constituents of contemporary society within a very short time. Understanding ICT, Concept of ICT and mastering over the key skills of ICT is now concerned as a core part of the education, alongside reading, writing and numeracy by many countries (Daniels, 2002). ICT is not generally referred to computer and computer related activities, other systems and technologies also consist of the phenomenon that is commonly regarded as ICTs. Near the end of 1980s, the term computers were replaced by 'IT' (Information Technology), which is followed by the introduction of the term ICT (Information and Communication Technology) around 1992 (Pelgrum & Law, 2003). United Nation Report (1999) stated that ICTs embrace internet service provisions, telecommunication equipment services, libraries and documentation centre, commercial information providers, network-based information services and other information and communication activities. According to UNESCO (2002) ICT may be regarded as the fusion of Information Technology with other related technology, specifically communication technology. The entire fields of education including teaching, learning, and research have been greatly influenced by ICT. On the basis of the use of ICT in education, it has been categorized into two broad categories: ICT in Education and ICT for Education. ICT in education intend teaching- learning process with ICT. It involves the adoption of general components of ICT like hardware, software, data, information procedures and human resources in the teaching learning process. Studies shown (Chaudhary & Sharma, 2012; Ruhee, Wani & Bilal, 2011; Shivkumar & Arunachalam, 2012; Rajasekar, 2009) that integration of ICT in teaching learning process and in curriculum has positive and significant impact on student's achievement in different subjects such as mathematics, science and social sciences specifically in knowledge and understanding domain of objectives, practical's & presentation skills.

The use of ICT in educational context, act as a catalyst for change in this field and because of having the variety in nature, it encourages and support individual and independent learning. As more and more students use ICTs for their learning as information resources and cognitive tools, the impact of the technology on students' learning affect their learning significantly (Reeves and Jonassen, 1996). According to Duffy and Cunningham (1996), contemporary learning theory is based on the notion that learning is an active process of constructing knowledge by individuals rather than acquiring and stored knowledge and that instruction is the process by which the knowledge construction is supported rather than a process of knowledge transmission.

Contemporary learning approaches using ICT as a tool, may provide many opportunities to constructivist learning through active efforts and support for context-related and student-centred learning.

Computer Based Instructional Package may contain graphics, text pictures and animations which can cover a specific part or whole of the lecture or concept with no provision of providing support from any other medium. It consists of a little more than an ordinary class room lecture or notes. In this mode of instruction computers are used as primary means of knowledge exposition. Thus, computer Based Instructional Packages may present any topic in a lively & an interactive mode.

The studies related to ICT are excessively conducted on relative effectiveness of Computer Based Instructions and comparative analysis with traditional and other methods or strategies of teaching. However, researcher found that in India most of the researchers are conducting researches to assess the attitude and awareness of students and teachers towards use of Information and Communication Technology. In this area researchers namely Karen (1990), Collins (1990), Dede (1990), David (1990), Kolderie (1990), Fletcher, Flin, & Gravatt, (1995), Trilling, Bernie, Hood & Paul (1999), Saxena and Gihar (2009), Halverson, Richard, conducted researches and explored this area of study. Chaudhary & Sharma (2012), Ruhee, Wani & Bilal (2011), Shivkumar & Arunachalam, (2012), Rajasekar (2009) conducted studies on Effectiveness of Information and Communication Technology and it has been found that ICT significantly improves effectiveness of teaching learning process. Similarly, Sarangi (1992), Singh (1991), studied effectiveness of Educational Television Programme, Shinde (2002), Singh (2001) studied effectiveness of Computerised Programme on achievement. Patel (2011), Ajmera (2002), Sharma (2014) studied effectiveness of Video Instructional Material and conducted researches and explored this area of study but no study conducted on How ICT and Computer Based Instructional Package improve our teachers effectiveness and students achievement in specific subject like Educational Psychology and no attempt has been made to develop Computer Based Instructional Package on Educational Psychology. From the review of related literature, it has been found that most of the researches related to ICT have been conducted on primary and secondary school students and teachers. But only few researches have been conducted on B.Ed. Pupil Teachers. Investigator explored the area but it is found that no Computer Based Instructional Package on Educational Psychology has been developed at B.Ed. level which may help pupil teachers in enhancing the comprehension of the contents. This Computer Based Instructional Package developed especially for pupil teachers or future teachers to provide insight in to Educational Psychology. It will hopefully be helpful for future teachers to identify, understand and nurturing their abilities with the help of study of Educational Psychology.

Objectives of Study

The present problem endeavours for the realization of the following objectives:

1. To compare adjusted mean scores of Achievement in Educational Psychology of B.Ed. students taught through Computer based Instructional Package and Traditional method of teaching by considering Pre-Achievement in Educational Psychology as covariate.
2. To study the effect of Treatment, Gender and their interaction on Achievement in Educational Psychology of B.Ed. students by considering Pre-Achievement in Educational Psychology as covariate.
3. To study the effect of Treatment, Intelligence and their interaction on Achievement in Educational Psychology of B.Ed. students by considering Pre- Achievement in Educational Psychology as covariate.

Hypotheses

The hypotheses of the present study were as follows:

1. There is no significant difference in the adjusted mean scores of Achievement in Educational Psychology of B.Ed. students taught through Computer based instructional package and traditional method of teaching by considering Pre- Achievement in Educational Psychology as covariate.
2. There is no significant effect of Treatment, Gender and their interaction on Achievement in Educational Psychology of B.Ed. students by considering Pre-Achievement in Educational Psychology as covariate
3. There is no significant effect of Treatment, Intelligence and their interaction on Achievement in Educational Psychology of B.Ed. students by considering Pre-Achievement in Educational Psychology as covariate.

Methodological Orientation

Sample

As the purpose of this study was to find out the relative effect of the Computer Based Instructional Package in enhancing the comprehension of Educational Psychology by student teachers, therefore researcher selected a total no. of 127 student teacher by the purposive method of sampling, wherein 75 students of B.Ed. and B.Ed.-M.Ed. (Integrated) were selected as an Experimental group and 52 Students of B.Ed. were taken as Control group. Since intact group of students were selected, therefore quasi experimental design was adopted by the researcher. However, the treatment was randomly assigned and both experimental and control group compared on the basis of treatment. Variable wise distribution of sample is given in the Table -1.

Table - 1 Variable Wise Distribution of Sample

Sr. No.	Variable	Groups	N
1	Treatment	Experimental Group	75
		Control Group	52
2	Gender	Male	55
		Female	72
3	Intelligence	Above Average	29
		Average	62
		Below Average	36

The intelligence of students was assessed by administrating the Verbal Intelligence Test developed and standardised by R. K. Ojha and K. Ray Chowdhery. Intelligence quotients were awarded on the basis of final score which was matched with table value provided in manual. Responded were categories in to three categories as above average (all the combined categories listed above average), average and below average (all the combined categories were listed below average).

Research Design

Present research was quasi experimental in nature. In this study researcher followed non-equivalent pre-test post-test control group design. It is a type of Quasi Experimental design by Campbell and Stanley. The researcher uses quasi experimental design because the experiment and control group were not made equivalent by assigning the individual in two groups randomly. Although the group to whom treatment is given was randomly assigned but, the groups that were intact were taken. The layout of the design is as follows:

O X O

.....

O O

Where X denotes the treatment, O before X denotes the Pre-Test & O after X denotes the Post Test. The dotted line means the group were not made equivalent before experiment. There were two groups; one group designated as Experimental group and the other as Control group. Experimental group was taught by Computer Based Instructional Package in Educational Psychology and control group was taught by Traditional method (Table -2).

Table – 2: Research Design

Group	Pre-Test	Treatment	Post- Test	Testing Effectiveness
Control Group N=52	O	Conventional Method of teaching	O	
Experiment Group N=75	O	Computer based instruction package	O	

Analysis of Data

Data was analysed objective wise with the help of following statistical techniques:

1. For comparing adjusted mean scores of Achievement in Educational Psychology of B.Ed. students taught through Computer Based Instructional Package & Traditional method of teaching by considering Pre- Achievement in Educational Psychology as covariate one-way ANCOVA was used.
2. For studying the effect of Treatment, Gender and their interaction on of Achievement in Educational Psychology of B.Ed. students by considering Pre- Achievement in Educational Psychology as covariate 2×2 Factorial Design ANCOVA was used.
3. For studying the effect of Treatment, Intelligence and their interaction on of Achievement in Educational Psychology of B.Ed. students by considering Pre- Achievement in Educational Psychology as covariate 3×2 Factorial Design ANCOVA was used.

Results and Interpretation

Analysis and interpretation of results has been done objective wise as follows:

1. Comparison of Adjusted Mean Scores of Achievement in Educational Psychology of Experimental and Control Group by Considering Pre-Achievement in Educational Psychology as Covariate.

The First objective of the study was to compare the adjusted mean scores of Achievement in Educational Psychology of B.Ed. students taught through Computer Based Instruction Package and Traditional Method of teaching by considering Pre-Achievement in Educational Psychology as covariate. There were two groups based on treatment, namely, Experimental group and Control group. For comparing the adjusted mean scores of Achievement in Educational Psychology of the two groups by taking Pre-Achievement in Educational Psychology as covariate, the data were analysed with the help of One-Way-ANCOVA. The results are given in Table - 3.

Table - 3: Summary of One Way ANCOVA of Achievement in Educational Psychology of B.Ed. Students by taking Pre-Achievement in Educational Psychology as covariate

Sources of Variation	Df	SSy.x	MSSy.x	Fy.x	Sig. (p)	Remark
Treatment	1	711.686	711.686	22.495	0.00	p< .01
Error	124	3923.110	31.638			
Total	125					

Table - 3 shows that adjusted F Value for treatment is 22.49 whose probability of significance with df = (1, 124) is .000 which is less than 0.01, hence significant at 0.01 level of significance. It indicates that the adjusted mean scores of

Achievement in Educational Psychology of Experiment group and Control group by considering pre-Achievement in Educational Psychology as covariate differ significantly. Hence the null hypothesis, there is no Significant difference in the adjusted mean score of Achievement in Educational Psychology of Experimental group and Control group by considering Pre Achievement in Educational Psychology as covariate, is rejected.

Table - 4: Group-wise adjusted mean scores of Achievement in Educational Psychology

Treatment	N	Adjusted Means
Experimental	75	34.43
Control	52	29.62

Further, it can be observed from Table – 4 that the adjusted mean scores of Achievement in Educational Psychology of the Experimental groups is 34.43 which is significantly higher than that of Traditional method group whose adjusted mean scores of Achievement in Educational Psychology is 29.62. It may, therefore, be concluded that the adjusted mean scores of Achievement in Educational Psychology taught through Computer Based Instructional Package was found to be significantly higher than that of Traditional method group when the groups were matched with respect to Pre-Achievement in Educational Psychology.

2. Effect of Treatment, Gender and Their Interaction on Achievement in Educational Psychology of B.Ed. Students by Considering Pre - Achievement in Educational Psychology as Covariate.

The second objective of the study was to study the effect of Treatment, Gender and their interaction on Achievement in Educational Psychology of B.Ed. students by considering Pre - Achievement in Educational Psychology as covariate. There were two levels each of the Treatment and Gender. Thus, the data with respect to this objective was analysed with the help of 2 * 2 Factorial Design ANCOVA. The results are given in Table - 5.

Table - 5: Summary of 2×2 Factorial Design ANCOVA of Treatment, Gender and their interaction on Achievement in Educational Psychology of B.Ed. Students by considering Pre-Achievement in Educational Psychology as covariate

Source of Variance	Df	SSy.x	MSSy.x	Fy.x	Sig (p)	Remark
Treatment	1	703.005	703.005	21.900	.000	P< 0.01
Gender	1	3.176	3.176	.009	.754	P > 0.05
Treatment * Gender	1	5.056	5.056	.157	.692	P > 0.05
Error	122	3916.350	32.101			
Total	125					

2.1. Effect of Treatment on Achievement in Educational Psychology by considering Pre-Achievement in Educational Psychology as covariate

Table shows that adjusted F Value for Treatment is 21.900 whose probability of significance with df = (1, 122) is .000 which is less than 0.01, hence significant at 0.01 level of significance. It indicates that the adjusted mean scores of Achievement in Educational Psychology of Experiment Group & Control Group by considering Pre-Achievement in Educational Psychology as covariate differ significantly. Hence the null hypothesis, there is no Significant difference in the adjusted mean score of Achievement in Educational Psychology of Experimental group and Control group by considering Pre - Achievement in Educational Psychology as covariate, is rejected. In order to find out which group of students have performed significantly better, the adjusted means of Experimental Group & Control Group are given in Table - 6.

Table - 6: Group wise adjusted mean scores of Achievement in Educational Psychology

Treatment	Adjusted Means
Experimental Group	34.43
Control Group	29.50

From the table, it is evident that the adjusted mean score of Achievement in Educational Psychology of the Experimental group is 34.43 which is significantly higher than that of Traditional method group whose adjusted mean score of Achievement in Educational Psychology is 29.50. It may, therefore, be concluded that the adjusted mean score of Achievement in Educational Psychology taught through Computer Based Instructional Package was found to be significantly higher than that of Traditional method group when Pre-Achievement in Educational Psychology was taken as covariate.

2.2. Effect of Gender on Achievement in Educational Psychology by considering Pre-Achievement in Educational Psychology as covariate

Table shows that the adjusted F value for Gender is .009, whose probability of significance with df = (1,122) is 0.754, which is greater than 0.05, hence not significant at 0.05 level of significance. It indicates that adjusted mean scores of Achievement in Educational Psychology of Males & Females do not differ significantly by taking Pre-Achievement in Educational Psychology as covariate. Hence the null hypothesis, there is no significant influence of Gender on Achievement in Educational Psychology by considering Pre-Achievement in Educational Psychology as covariate is not rejected. It may therefore, be concluded that Achievement in Educational Psychology of Males and Females was found to be equally enhanced, when both the groups were matched with respect to Pre - Achievement in Educational Psychology.

2.3. Effect of Interaction between Treatment & Gender on Achievement

in Educational Psychology by considering Pre-Achievement in Educational Psychology as covariate

The adjusted F value for interaction between Treatment & Gender is 0.157 whose probability of significance with df = (1,122) is 0.692 which is greater than 0.05, hence not significant at 0.05 level of significance. It indicates that there is no significant effect of interaction between Treatment and Gender on Achievement in Educational Psychology by considering Pre - Achievement in Educational Psychology as covariate. Hence the null hypothesis, there is no significant effect of interaction of Treatment & Gender on Achievement in Educational Psychology of B.Ed. students by considering Pre - Achievement in Educational Psychology as covariate, is not rejected. It may, therefore, be concluded that Achievement in Educational Psychology of Males and Females was found to be equally enhanced when taught through Computer Based Instructional Package by considering Pre-Achievement in Educational Psychology as covariate.

3. Effect of Treatment, Intelligence and Their Interaction on Achievement in Educational Psychology of B.Ed. Students by Considering Pre - Achievement in Educational Psychology as Covariate.

The third objective of the study was to study the effect of Treatment, Intelligence and their interaction on Achievement in Educational Psychology of B.Ed. students by considering Pre - Achievement in Educational Psychology as covariate. There were two levels of Treatment and three levels of Intelligence. Thus, the data with respect to this objective was analysed with the help of 2×3 Factorial Design ANCOVA. The results are given in Table - 7.

Table - 7: Summary of 2 * 3 Factorial Design ANCOVA of Treatment, Intelligence & their interaction on Achievement in Educational Psychology of B.Ed. students by considering Pre-Achievement in Educational Psychology as covariate

Source of Variance	Df	SSy.x	MSSy.x	Fy.x	Sig (p)	Remark
Treatment	1	673.972	673.972	24.929	.000	P < 0.01
Intelligence	2	430.633	215.317	7.964	.001	P < 0.01
Treatment * Intelligence	2	130.872	65.436	2.420	.093	P > 0.05
Error	120	3244.338	27.036			
Total	125					

3.1. Effect of Treatment on Achievement in Educational Psychology by considering Pre-Achievement in Educational Psychology as covariate

Table shows that adjusted F Value for Treatment is 24.929 whose probability of significance with df = (1, 120) is .000 which is less than 0.01, hence significant at 0.01 level of significance. It indicates that the adjusted mean scores of Achievement in Educational Psychology of Experiment Group and Control

Group by considering Pre-Achievement in Educational Psychology as covariate differ significantly. Hence the null hypothesis, there is no Significant difference in the adjusted mean score of Achievement in Educational Psychology of Experimental group & Control group by considering Pre Achievement in Educational Psychology as covariate, is rejected.

In order to find out which group of students have performed significantly better, the adjusted means of Experimental Group and Control Group are given in Table - 8.

Table – 8: Group wise adjusted mean scores of Achievement in Educational Psychology

Treatment	Adjusted Means
Experimental Group	34.68
Control Group	29.71

From the above table, it is evident that the adjusted mean scores of Achievement in Educational Psychology of the Experimental Group is 34.68 which is significantly higher than that of Control Group whose adjusted mean scores of Achievement in Educational Psychology is 29.71. It may, therefore, be concluded that the adjusted mean scores of Achievement in Educational Psychology taught through Computer Based Instructional Package was found to be significantly higher than that of Traditional method group when Pre-Achievement in Educational Psychology was taken as covariate.

3.2. Effect of Intelligence on Achievement in Educational Psychology by considering Pre-Achievement in Educational Psychology as covariate

From the table, it can be seen that adjusted F value for Intelligence is 7.964 whose probability of significance with df = (1, 120) is .001 which is less than 0.01, hence significant at 0.01 level of significance. It indicates that the adjusted mean scores of Achievement in Educational Psychology of three groups namely Above Average, Average and Below Average by considering Pre-Achievement in Educational Psychology as covariate differ significantly. Hence the null hypothesis, there is no significant effect of Intelligence on Achievement in Educational Psychology by considering Pre - Achievement in Educational Psychology as covariate, is rejected.

To study as to where the difference in Achievement in Educational Psychology lie, Pairwise comparison of the three Intelligence groups were undertaken, the results of which are given below in Table - 9.

Table – 9: Pairwise Comparison of Achievement in Educational Psychology of the three Intelligence Groups by considering Pre-Achievement in Educational Psychology as covariate

Intelligence Pairs (I)	(J)	Mean Difference (I - J)	Standard Error	Sig (p)	Remark
Above Average	Average	3.01	1.21	.04	P< 0.05
Above Average	Below Average	5.44	1.36	.00	P < 0.05
Average	Below Average	2.42	1.13	.10	P > 0.05

It can be observed from the table - 9 that out of three pairs of Intelligence groups, the difference in mean scores of Achievements of students in two pairs are significant where as in third pair this difference is not significant at 0.05 level of significance. The difference in mean scores of Achievement in Educational Psychology between the Above Average Intelligence group and Average Intelligence Group is 3.01 (the mean score of Achievement in Educational Psychology Above Average being the higher one) is significant at .05 level of significance. This means that the Achievement in Educational Psychology of Above Average Intelligence group was found to be significantly higher than Average group. Thus, Above Average Intelligence group was found to be more effective in terms of Achievement in Educational Psychology. Likewise, the difference between mean scores of Achievement between Above Average Intelligence group and Below Average Intelligence group was found to be 5.44 which is significant at .01 level of significance. It means that the Above Average Intelligence group was found to be superior to the Below Average Intelligence group in terms of Achievement in Educational Psychology. Further, the difference in mean scores of Achievement of Average Intelligence Group and Below Average Intelligence group was found to be 2.42 which are no significant at 0.05 level of significance. This means that the two groups were not found to be different from each other as far as Achievement in Educational Psychology of students is concerned.

3.3. Effect of Interaction between Treatment and Intelligence on Achievement in Educational Psychology by considering Pre-Achievement in Educational Psychology as covariate.

Table-7 shows that the adjusted F value for the interaction between Treatment and Intelligence is 2.420 whose probability of significance with df = (1,120) is .093 which is greater than 0.05, hence not significant at 0.05 level of significance. It indicates that there is no significant effect of interaction between Treatment and Intelligence on Achievement in Educational Psychology by considering Pre-Achievement in Educational Psychology as covariate. Hence the null hypothesis, there is no significant effect of interaction of Treatment and Intelligence on Achievement in Educational Psychology of B.Ed. students by considering

Pre-Achievement in Educational Psychology as covariate, is not rejected. It may, therefore be concluded that Achievement in Educational Psychology was found to be independent of the interaction between Treatment and Intelligence when taught through Computer Based Instructional Package by considering Pre Achievement in Educational Psychology as covariate, and it may also be concluded that irrespective of level of Intelligence, Achievement in Educational Psychology can be equally enhanced when taught through Computer Based Instructional Package.

Findings and Discussion

The following were the findings of the present research:

- Computer Based Instructional Package in Educational Psychology was found to be effective in terms of Achievement in Educational Psychology
- Computer Based Instructional Package in Educational Psychology was found to be significantly enhance the Achievement in Educational Psychology of the Pupil Teachers as compared to the Traditional Method of Teaching
- There was no significant effect of Gender on Achievement in Educational Psychology by considering Pre-Achievement in Educational Psychology as covariate.
- There was no significant effect of interaction between Treatment and Gender on Achievement in Educational Psychology by considering Pre-Achievement in Educational Psychology as covariate. Achievement in Educational Psychology of males and females was found to equally enhance when taught through Computer Based Instructional Package.
- Achievement in Educational Psychology of the three groups namely Above Average Intelligence, Average Intelligence and Below Average Intelligence by considering Pre-Achievement in Educational Psychology as covariate differs significantly. It was found that the Achievement in Educational Psychology of Above Average Intelligence group was found to be significantly higher than Average group Intelligence. Thus, Above Average Intelligence group was found to be more effective in terms of Achievement in Educational Psychology. Likewise, the difference between mean scores of Achievement between Above Average Intelligence group and Below Average Intelligence group was found to be significant. It means that the Above Average Intelligence group was found to be superior to the Below Average Intelligence group in terms of Achievement in Educational Psychology. Achievement of Average Intelligence and Below Average Intelligence group was found to be not significant. It indicates that the two groups were not found to be different from each other as far as Achievement in Educational Psychology of students is concerned.
- There was no significant effect of interaction between Treatment and Intelligence on Achievement in Educational Psychology by considering

Pre Achievement in Educational Psychology as covariate. Achievement in Educational Psychology was found to be independent of the interaction between Treatment and Intelligence by considering Pre-Achievement in Educational Psychology as covariate, and it may be concluded that irrespective of level of Intelligence, Educational Psychology can be taught equally well through Computer Based Instructional Package

Discussion of Findings

Findings of the study are being discussed below objective-wise:

1. *Achievement in Educational Psychology of Students Taught through Computer Based Instructional Package*

Computer Based Instructional Package in Educational Psychology was found to be enhanced the Achievement of B.Ed. Students in Educational Psychology. The finding was supported by Sheingold (1990), Collins (1990), Dede (1990), Idayani (1991), Singh (1991), Sarangi (1992), Pandya (1994), Flinn & Gravatt (1995), Shinde (2002),Kanwaria (2010), Gurtu (2011), Cornelius & Gordon (2012), Banerjee, Murthy & Iyer (2011), Khare (2015), Johnson (2010), Patel (2011), Nikolas (2012), Fard et al. (2014), Sultan (2013), Sharma (2016), Shinde (2016) who found that Video Instructional Material and other audio-visual program enhanced the Achievement of students in different subjects while not supported by Sarangi (1992), Singh (2001), Gupta (2008), Sultan (2013), Jhariya (2014), Sharma (2016), who found that video instructional material and other ICT-based instructional material was not found to be effective in terms of Achievement. Further, the Computer Based Instructional Material was found to be effective as well as superior to Traditional method when groups were matched with respect to Pre-Achievement. This finding was supported by James(1998), Idayani (1991), Kaimuthu (1991), Singh (1991), Sahoo (1994), Lal (1996), Behera (1997), Shinde (2002), Ajmera (2002), Shukla (2003), Hancer & Tuzeman (2008), Singh & Sansanwal (2009), Aqd et al. (2011), Celikler & Aksan (2011), Serin (2011), Sang et al. (2012), Sharma (2013) and Jhariya (2014) who found learning through viewing of the video films and other ICT related instructional material was more effective than learning through traditional method. Computer Based Instructional Package in Educational Psychology was prepared on the basis of scripts which were developed after going through content analysis and reviewing researches concerned to this topic. Investigator used a variety of internet resources to make the package comprehensive and interesting. Computer Based Instructional Package covers the whole content comprehensively & appropriate graphics and animations were used to illustrate experiments and theories related to the specific content. The classroom climate was active and students thoroughly enjoyed studying Educational Psychology with the help of developed CBI Package. Students were felt free of fear while studying through CBI Package in comparison to their traditional classes. In traditional method, students cannot talk and feel passive in classroom while teacher is

active. Students learn according the pace of teacher and could not clear their all doubts in traditional method and most of the time repletion of content is not possible. But students who were studied through CBI Package in Educational Psychology were free to see any part of the package as many times as they like and they were free to stop the content at any point of time. They also had the freedom to discuss among themselves as well as with the teacher since think & reflect questions were also there in CBI Package to give opportunity to students to reflect. These might be the reason for present findings.

2. Effect of Gender on Achievement in Educational Psychology

Both, Males and Females were found to achieve equally in terms of Achievement in Educational Psychology when the groups were matched with respect to Pre-Achievement in Educational Psychology. This finding was supported by Pandya (1994), Behera (1997), Singh (2001), Shukla (2003), Shinde (2007), Gupta (2008), Serin (2011), Sharma (2013), Sultan (2013), Jhariya (2014), Shinde (2016), and Sharma (2016) who found that Gender has no significant effect on Achievement in Educational Psychology when students were taught through different kind of ICT based instructional material while in a very few researches, Males were found to be superior in terms of Achievement on a specific topic of subject Research Methodology (Shinde, 2007) and Females were found to be significantly superior in terms of Achievement (Patel,2011). In present scenario, both Males and Females have not been discriminated and they both are getting equal opportunities to learn and excel in every field. Since the CBI Package was same in terms of content and presentation irrespective of Gender and all the activities carried out in classroom for teaching were same for Males & Females. They both got equal opportunity to discuss & reflect. Thus, this might be the reason for the present findings.

Further, there was no significant effect of interaction of Treatment and Gender on Achievement in Educational Psychology by considering Pre - Achievement in Educational Psychology as covariate. In other words, CBI Package was found to be equally effective in terms of Achievement for both Males and Females by considering Pre-Achievement as covariate. This finding was supported by Singh (2001), Sultan (2013), Shinde (2016) & Sharma (2016) who found that Gender was not significantly related to Achievement when different methods of teaching were used. This finding reveals that Gender may not be kept in mind while developing CBI Package. The CBI Package was same for Males and Females with respect to content, sequence, illustration & use of graphics and animations etc. There was no gender bias while teaching through CBI Package in classroom and the freedom to ask questions was same for Males and Females while studying through CBI Package. Both Male and Female B.Ed. students might have satisfied with the reply given by teacher. These might be the reason for present findings.

3. Effect of Intelligence on Achievement in Educational Psychology

Intelligence effect significantly the Achievement of students in Educational Psychology by considering Pre - Achievement in Educational Psychology as covariate. This finding is supported by few researches, Shinde (2007), Sharma (2016), Shinde (2016) which also reveal that students belonging to the Above Average group and Average Intelligence group were found to be significantly superior to students belonging to Below Average Intelligence group in terms of Achievement in Educational Psychology while not supported by Lal (1996) who found that low Intelligence students were superior to high Intelligence students when taught through Video Instructional material in Home Science. The reason for the present finding might be that Above Average Intelligence Students are fast learners and concentrate more while learning. They have strong grasping power, problem solving ability and reasoning ability. They can understand the abstract content easily and instead of cramming, they focus to understand the matter that helps them to retain the subject matter for longer time.

Effect of Interaction between Treatment and Intelligence on Achievement of Students in Educational Psychology

In present study, Achievement in Educational Psychology was found to be independent of interaction between Treatment & Intelligence by considering Pre-Achievement as covariate, and it may be concluded that irrespective of level of Intelligence, students belonging to all the three groups namely Above Average, Average and Below Average were found to be benefitted equally when taught through Computer Based Instructional Package in Educational Psychology in comparison to Traditional Method. This finding are supported by Lal (1996), Sharma (2013), Jhariya (2014), Sharma (2016), who found that Instructional Material alone as well as combination with other method of teaching was found to be equally benefitted in terms of Achievement for different level of Intelligence but the findings are not supported by Sharma (2016) and Shinde (2016) who reported that Intelligence and Achievement have a significant and positive relationship when taught through Instructional Material alone as well as combination with other Method of Teaching. The reason of the present finding might be that the content was presented through Computer Based Instructional Package was in simple and routine language, and daily life examples were also given that helped to understand the subject matter easily. Graphics and Animations were used to make content interesting and effective. Freedom was also given to the students to stop the Instructional Package and rewind it where needed. This might have helped the students to make better understand the subject matter and all these might have helped Average and Below Average Intelligent students to get Achievement quite close to Above Average Intelligent students. Thus, there was no significant effect of interaction of Treatment & Intelligence on Achievement in Educational Psychology when groups were matched with respect to Pre-Achievement in Educational Psychology.

Conclusions

The present study revealed that the Computer Based Instructional Package in Educational Psychology was found to enhance and strengthen the subject clarity and achievement in educational psychology of B.Ed. students irrespective of their Gender, Intelligence, Academic Discipline, Personality & Socio-Economic Status. This Computer Based Instructional Package can be very useful for teachers to gain better insight to access different e-resources in order to make them competent with respect to content and pedagogical approach required for this subject. It may be helpful for teacher educators to find out the new ways and means of teaching such a sensitive subject at this level. They can use this package at their own pace and they can go a long way for improving the quality of teaching of educational psychology. They can also get an idea how we can develop CBI Package according to their respective syllabus. In this way teachers can enhance the use of ICT is a tool in their classroom to create interesting projects and virtual exposure in effective learning conditions.

References

Amereshwaran, N & Singh, S.(2011). Teacher Education through Open & Distance Learning-Information and Communication technology-based Pedagogy Integration. Techno learn Vol-1, No.1, pp.53-63.

Adams, H., & Searle, L. (Eds.). (1992). Critical theory since Plato (p. 70). New York: Harcourt Brace Jovanovich College Publishers.

Al-Sulaimani, A. A. (2010). The importance of teachers in integrating ICT into science teaching in intermediate schools in Saudi Arabia: A mixed methods study (Doctoral dissertation, RMIT University).

Aqda, M. F., Hamidi, F., & Rahimi, M. (2011). The comparative effect of computer-aided instruction and traditional teaching on student's creativity in math classes. Procedia Computer Science, 3, 266-270.

Bingimlas, K. A. (2009). Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature. Eurasia Journal of Mathematics, Science & Technology Education, 5(3), 235-245.

Celikler, D., & Aksan, Z. (2011). The effect of computer assisted instruction in teaching ionic compounds on pre-service elementary science teachers' academic achievement and permanent learning. Procedia-Social and Behavioural Sciences, 28, 547-552.

Daniels J.S. (2002) "Foreword" in Information and Communication Technology in Education–A Curriculum for Schools and Programme for Teacher Development. Paris:UNESCO.

Fard, A. E., Asgary, A., Sarami, G. R., & Zarekar, A. (2014). A Comparative Study of the Effect of Computer-based Instruction and Problem-solving Instruction on the Students' Creativity. Journal of Education and Training Studies, 2(2), 105-113.

Fletcher-Flinn, C. M., & Gravatt, B. (1995). The efficacy of computer assisted instruction (CAI): A meta-analysis. Journal of educational computing research, 12(3), 219-241.

Hadjerrouit, S. (2008). Using a learner-centred approach to teach ICT in secondary schools: An exploratory study. Issues in Informing Science and Information Technology,

5, 233-259.
Joe, A.L. (1995). Basic concepts of educational measurement and evaluation. Port Harcourt: Paragraphics.
Jayanthi, J (2014). Development and Validation of an Achievement Test in Mathematics. International Journal of Mathematics and Statistics Invention (IJMSI), Volume 2, Issue 4, pp.-40-46.
Kaplan, A., & Maehr, M. L. (1999). Achievement goals and student well-being.Contemporary educational psychology, 24(4), 330-358.
Kale, U., & Goh, D. (2012). Teaching style, ICT experience and teachers' attitudes toward teaching with Web 2.0. Education and Information Technology. 18, 41-60. doi : 10.1007/s10639-012-
Kant, R. (2016). Relationship between attitude towards using new technologies & teaching effectiveness. International Journal of Research Studies in Educational Technology, 5(2).
Kurt, S. (2013). Examining teachers' use of computer-based technologies: A case study. Education and Information Technologies, 18(4),557-570. http://link.springer.com/article/10.1007/s10639-012-9199-7
Kulik, J. (2003). "Effects of using instructional technology in elementary and secondary schools: What controlled evaluation studies say (Final Report No. P10446.001)". Arlington, VA: SRI International.
Patel, S. (2011) : Effectiveness of Video Instructional Material on Counselling in Terms of Achievement and Reaction of B.Ed. students, M.Ed. Dissertation, D.A.V.V, Indore.
Pelgrum, W. J., Law, N. (2003) "ICT in Education around the World: Trends, Problems and Prospects"UNESCO-International Institute for Educational Planning. Available: www.worldcatlibraries.org/wcpa/ow/02d077080fcf3210a19afeb4da09e526.html
Qiyun W. (2008) A generic model for guiding the integration of ICT into teaching and learning, Innovations in Education and Teaching International, 45:4, 411-419, DOI: 10.1080/14703290802377307
Saxena, M. K., Bala, R., & Upadhyay, M. (2014). A study of computer phobia among prospective teachers. Learning Community: An International Journal of Educational and Social Development, 5(2/3), 129.
Sang, G., Valcke, M., Van,B, J., Zhu, C., Tondeur, J., & Yu, K. (2012). Challenging science teachers' beliefs and practices through a video-case-based intervention in China's primary schools. Asia-Pacific Journal of Teacher Education, 40(4), 363-378.
Serow, P., & Callingham, R. (2008). The introduction of interactive whiteboard technology in the primary mathematics classroom: Three case studies. Navigating currents and charting directions, 453-459.
Serin, O. (2011). The effects of the computer-based instruction on the achievement and problem-solving skills of the science and technology students. TOJET: The Turkish Online Journal of Educational Technology, 10(1). P 183-201.
Sefton-Green, J. (1998). Introduction: Being Young in the Digital Age. In J. Sefton-Green (Ed.), Digital diversions: youth culture in the age of multimedia (pp. 1 - 20). London and New York: Routledge.
Sife, A., Lwoga, E., & Sanga, C. (2007). New technologies for teaching and learning: Challenges for higher learning institutions in developing countries. International

journal of education and development using ICT, 3(2).
Shinde, J. (2002): Effectiveness of Multimedia CAI Package with Reference to Levels of Interactivity and Learning Style, Unpublished Ph.D. Thesis (Edu), SNDT Women's University.
Somekh, B. (2008). Factors affecting teachers' pedagogical adoption of ICT. International handbook of information technology in primary and secondary education, 449-460.
Singh, S. P., & Chaudhary, S. (2016). Technologies in Facilitating Professional Growth and Capacity Building. World Scientific News, 26, 39.
Thomas, Brian., & Eryilmaz Evren. (2013). Introducing a twitter discussion board to support learning in online and blended learning environments. Education and Information Technology. 20,265–283. doi: 10.1007/s10639-013-9279-3.
Vaezinia, S., & Dehghani, F.(2016). Investigating the Relationship between Teachers' Attitudes towards the Use of Educational Technologies in Teaching and the Academic Motivations in the Students. Journal of Administrative Management, Education and Training, 12, 62-71
Verhoeven, J. C., Heerwegh, D., & De Wit, K. (2010). Information and communication technologies in the life of university freshmen: An analysis of change. Computers & Education, 55(1), 53-66.
Wai, Cho Cho., & Limkok, Ernest. (2013). Measuring the effectiveness of blended learning environment: A case study in Malaysia. Education and Information Technology. 20, 429-443. doi: 10.1007/s10639-013-9293-5.
Winnie Wing-mui so (2012). Quality of learning outcomes in an online video-based learning community: potential and challenges for student teachers, Asia-Pacific Journal of Teacher Education, 40:2, 143-158, DOI: 10.1080/1359866X.2012.669828