

EFFECTIVENESS OF CAI ON ICT IN TERMS OF ACHIEVEMENT OF B. ED. STUDENTS OF INDORE DISTRICT

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Abstract

Computer Assisted Instruction or Computer Aided Instruction (CAI) includes the use of computers to teach academic skills and to promote communication and language development. It includes computer modeling and computer tutorials. CAI uses a combination of text, graphics, sound and video in enhancing the learning process. CAI programs use tutorials, drill and practice, simulation, and problem solving approaches to present topics, and they test the student's understanding. Typical CAI provides text or multimedia content, multiple-choice questions, problems, immediate feedback, notes on incorrect responses, summary of students' performance, exercises for practice, worksheets and tests etc. The sample comprised of 107 students pursuing B. Ed. course studying in two sections of 60 students each at School of Education, D.A.V.V., Indore during the 2011-12 academic session. The achievement of students was assessed with the help of a researcher made Criterion Reference Test consisting of 40 questions. The findings of this study was "CBCRI (Computer Based Classroom Instruction) is significantly more effective than traditional instruction in terms of Achievement of B. Ed. students".

Key words : Computer Based Classroom Instruction :-A method of instruction where programs of instructional material are presented by means of a computer or computer systems to students in a classroom.

Computer Based Classroom Instruction (CBCRI) is defined as the use of the computer in the delivery of instruction in the class room. Some common categories of CBCRI include Drill and Learning, Tutorial Simulation, Instructional Game, Problem Solving, etc.. Computer based instruction is a relatively newer development in classroom based instruction and is poised to revolutionize instructional methodology in the near future owing to its benefits vis-à-vis traditional methods of instruction. This has also lead to an almost universal acceptance of this means of instruction as a versatile, cost effective, invigorating, and efficient means of classroom based instruction. This study has made an effort towards experimenting with computer based classroom instruction in the field of education technology to determine the former's impact on B. Ed. students with respect to Achievement variable, which is a pointer towards achieving efficiency and effectiveness when it comes to imparting classroom based instruction.

Rationale : It is commonly thought that new technologies can make a big difference in education. The rapid advances in technology, the need for lifelong learning, and the growth of non-traditional students have encouraged the growth of computers as a means of instructional delivery. According to the Sloan Foundation reports, there has been an increase of around 12–14 percent per year on average in enrollments for fully online learning over the five years 2004–2009 in the post-secondary system, compared with an average of approximately 2 per cent increase per year in enrollments overall. "Most programs of computer-based instruction evaluated in the past have produced positive effects on student learning and attitudes. Further programs for developing and implementing computer-based instruction should therefore be encouraged." The present work was a study towards discovering whether this relatively new phenomena of CBCRI can be effectively utilized to improve certain parameters that have a bearing on learner performance i.e achievement.

Objectives : The objectives comprised to study the effect of Gender, Treatment and their interaction on Achievement of

B. Ed. Students and to study the effect of Medium of Instruction, Treatment, and their interaction on Achievement of B. Ed. students.

Hypotheses : The hypotheses formulated were there is no significant effect of Gender, Treatment, and their interaction on Achievement of B. Ed. Students and there is no significant effect of Medium of Instruction, Treatment, and their interaction on Achievement of B. Ed. students.

Research Design : The sample comprised of 107 students of B. Ed. studying in two sections of 60 students each at School of Education, D.A.V.V., Indore during the 2011-12 academic session. Two different types of treatment were randomly assigned to two sections of B. Ed. students at School of Education. One section of 55 students was made the experimental group and other section of 52 students was made the control group. The number of male and female students for this research were 34 and 73 respectively. The number of English medium students in this research was 25 and the number of Hindi medium students was 82. Purposive sampling technique was used. The students were of the age group between 20 to 35 years. They belonged to different socio-economic backgrounds and were able to understand, read, and write Hindi and English properly. Achievement was the dependent variable of the study. Treatment, Sex, and Medium of Instruction were the independent variables. The tool used for the study was the *Achievement Test*. The achievement of students in the subject 'Information and Communication Technology' (subject code : 518) of B. Ed., SOE, D.A.V.V., Indore, was assessed with the help of a Criterion Reference Test consisting of 40 questions. All questions except the last question were multiple choice type. For each answer made to the first 39 questions, a student had to rate his confidence in responding on a four point scale. Maximum marks for the test were 40 and the total time given for completing the test was 1 hour. To collect the data, out of two B. Ed. sections, one section was assigned with the treatment of CBCRI, and was called the experimental group (E1) and section E2 was

the control group assigned with the treatment of traditional teaching. Pre achievement test was administered on both sections. Pre test for assessment of achievement (along with confidence in responding) was administered on both experimental and control groups. The experimental group E1 (B. Ed. Section A) was treated with computer based classroom instructions and the control group E2 (B. Ed. section B) was treated with traditional method of classroom instruction. These treatments were given for 5 days and after the completion of 5 days, the achievement test was re-administered to both groups.

Interpretation, Result and Discussion

The data of first objective was analyzed with the help of two ways ANOVA. The results are given in **table 1**.

TABLE 1 : Summary of 2*2 factorial ANOVA for effect of Gender, Treatment and their interaction on Achievement of B. Ed. students :

Source of Variance	Df	Sum of Squares	Mean Square	F
Gender	1	105.080	105.080	3.598
Treatment	1	2382.114	2382.114	81.573*
Gender* Treatment	1	13.934	13.934	0.477

*** Significant at 0.01 level of significance**

It is evident from table1 that the value of ‘F’ is 3.598 with degree of freedom 1/106 which is not significant at 0.05 level of significance. It reflects that there is no significant difference between the mean Achievement scores of male and female students. Hence, the null hypothesis “There is no significant effect of Gender on Achievement of B. Ed. students” is not rejected.

Discussion : The achievement of B. Ed. students was found to be independent of their Gender. This may be because there was no gender bias in administering the CBCRI teaching material. Also, equal freedom and opportunity for participation was given to both males and females in the classroom. Moreover, all males and females in the classroom did not have major differences in their ages and maturity levels.

It is evident from table 1 that the value of ‘F’ is 81.573 with degree of freedom 1/106 which is significant at 0.01 level of significance. It reflects that there is a significant difference between the mean Achievement scores of students treated with CBCRI (Computer Based Classroom Instruction) and those treated with traditional instruction. Hence, the null hypothesis “There is no significant effect of Treatment on Achievement of B. Ed. students” is rejected.

TABLE 2 : Mean Achievement score of CBCRI and Traditional instruction

Treatment	Mean	N
CBCRI	26.2000	55
Traditional Instruction	16.3077	52

Further, it has been found from table 2 that mean Achievement score of students taught through CBCRI is significantly higher (26.200) than that of the students taught through traditional method (16.3077). It may, therefore, be concluded that CBCRI is significantly effective than traditional instruction in terms of Achievement of B. Ed. students. In other words, CBCRI is significantly effective in increasing the Achievement of B. Ed. students.

Discussion : CBCRI had a novelty value for the students due to which they found it more interesting and were enthusiastic about learning through it. The CBCRI material presented to them was also designed in a manner to be easily comprehensible, i.e. it was arranged in a sequential nature progressing from simple to complex, contained attractive slides and provided effective use of audio-visual aids.

It is evident from table 1 that the value of ‘F’ is 0.491 with degree of freedom 1/106 which is not significant at 0.05 level of significance. It reflects that there is no significant difference between interaction of Gender and Treatment on mean achievement scores of students treated with CBCRI and with traditional instruction. Hence, the null hypothesis “There is no significant effect of Gender, Treatment, and their interaction on Achievement of B. Ed. students.” is not rejected. It may, therefore, be concluded that there is no significant effect of interaction of Gender and Treatment on Achievement of B. Ed. students. In other words, the achievement of B. Ed.. students is independent of the interaction between Treatment and their Gender.

Discussion : The male and female students on whom the achievement test was administered were of similar age group and maturity level. This was a major factor why they reacted similarly to CBCRI stimuli. Both genders scored higher on achievement when treated with CBCRI because they found the CBCRI material more interesting, stimulating, and easy to understand than traditional learning method. The use of interesting slides, the progressive sequencing of CBCRI material from simple to complex, and the usage of audio-visual aids produced similar responses in both genders because of the abovementioned reasons.

The data of second objective was analyzed with the help of two way ANOVA. The results are given in **table 3**.

TABLE 3 : Summary of 2*2 factorial ANOVA for effect of Medium of Instruction, Treatment and their interaction on Achievement of B. Ed. students

Source of Variance	df	Sum of Square	Mean Square	F
Medium of Instruction	1	543.622	543.622	21.684*
Treatment	1	2067.397	2067.397	82.465*
Medium of Instruction * Treatment	1	2.399	2.399	.096

***Significant at 0.01 level of significance**

It is evident from table 3 that the value of ‘F’ is 21.684 with degree of freedom 1/106 which is significant at 0.01 level of significance. It reflects that there is a significant difference between the mean Achievement scores of Hindi medium and English medium students. Hence, the null hypothesis “There is no significant effect of Medium of Instruction on Achievement of B. Ed. students” is rejected.

TABLE 4 : Mean Achievement score of Hindi and English medium students :

Medium of Instruction	Mean	N
Hindi	20.3780	82
English	24.7200	25

Further, it has been found from **table 4** that mean Achievement score of English medium students is significantly higher (24.72) than that of Hindi medium students (20.378). It may,

therefore, be concluded that English medium students have significantly higher Achievement as compare to Hindi medium students.

Discussion : English medium students had significantly higher Achievement as compared to Hindi medium students because the former identified themselves better with the Medium of Instruction (English) than the latter. Also, the day to day exposure to computer has English as the medium of operation due to which persons who are good at English are able to adapt themselves faster with computers. Another reason could be that since the number of English medium students was much lesser than the number of Hindi medium students, their responses may not be averaged out as effectively as that of Hindi Medium students.

It is evident from table 3 that the value of 'F' is 82.465 with degree of freedom 1/106 which is significant at 0.01 level of significance. It reflects that there is a significant difference between the mean Achievement scores of the students treated with CBCRI (Computer Based Classroom Instruction) and with traditional instruction. Hence, the null hypothesis "There is no significant effect of Treatment on Achievement of B. Ed. students" is rejected. Further, it has been found from vide table 2 that mean Achievement score of students taught through CBCRI is significantly higher (26.200) than that of the students taught through traditional method (16.3077). It may, therefore, be concluded that CBCRI is significantly effective than traditional instruction in terms of Achievement of B. ED. students. In other words, CBCRI is significantly effective in increasing the Achievement of B. Ed. students.

Discussion : CBCRI had a novelty value for the students due to which they found it more interesting and were enthusiastic about learning through it. The CBCRI material presented to them was also designed in a manner to be easily comprehensible, i.e. it was arranged in a sequential nature progressing from simple to complex, contained attractive slides and provided effective use of audio-visual aids.

It is clear from table 3 that the value of 'F' is 0.096 with degree of freedom 1/106 which is not significant at 0.05 level of significance. It reflects that there is no significant difference between interaction of Treatment and Medium of Instruction on mean Achievement scores of students treated with CBCRI and with traditional instruction. Hence, the null hypothesis "There is no significant effect of Medium of Instruction, Treatment, and their interaction on Achievement

of B. Ed. students." is not rejected. In other words, the Achievement of B. Ed. students is independent of the interaction between Medium of Instructions and Treatment.

Implications : CBCRI can be used by teachers to make the teaching-learning process more effective and efficient. As CBCRI gains more prominence in the field of educational technology, teachers have to upgrade their skills in order to adapt themselves to this mode of instruction. These skills may include information technology skills so that teachers may be able to develop their own customized CBCRI program. Learning through CBCRI is interesting and fun and therefore students can look forward to an exhilarating learning experience which shall mean that they could learn with more personal involvement from their side. Education Administrators have to provide adequate infrastructure for implementation of CBCRI program at the institutional level. This includes provision of computer labs, IT enabled classrooms, WiFi, etc. Computer Education and CBCRI methods should be included in the syllabus of teacher training institutes so that the Teacher Educators may develop the requisite skills to train teachers on these aspects. The textbook writers could endeavour to provide textbooks that are lucid and updated with the latest developments in the field of computers. They have to foresee into the near future and provide for adequate material in their textbooks so that the textbooks do not get obsolete soon. Software developers must endeavour to gather some knowledge of the subject on which they shall design their computer programs. This shall help them in understanding the expectations out of the end product which in turn would lead to development of superior software.

References

- Aggarwal, J.C. (2011), Essentials of Educational Technology, Vikas Publishing House Pvt Ltd., New Delhi.
- Liao, Yuen-kuang Cliff, 2007, Effects of Computer-Assisted Instruction on Students' Achievement in Taiwan : A Meta-Analysis, <http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp>
- Mangal, S.K., Mangal, U 2011, Essentials of Educational Technology, PHI, New Delhi.
- Muhammad Khalid Mahmood, Munawar Sultana Mirza, 2012, Effectiveness of Computer Assisted Instruction in Urdu Language for Secondary School Students' Achievement in Science, vide URL <http://www.languageinindia.com/feb2012/computerassisted.pdf>
- Ođuz Serin, 2011, The Effects of the Computer - Based Instruction on the Achievement and Problem Solving Skills of the Science and Technology Students, vide URL <http://tojet.net/articles/v10i1/10119.pdf>