



Comparative Study of Computer Managed Instruction Based on Method of Teaching Bio-Sciences with Traditional Instruction in Terms of Selected Variables of B.Ed. Students

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Abstract

The present research paper is related to the area of Information and Communication Technology (ICT) in education and Instructional Technology. The main objective of this research paper is to compare the mean Achievement-motivation and Tolerance of Ambiguity scores of the students studying through Computer Managed Instruction with those studying through Traditional Instruction. Personality, Study-Habit and Level of Aspiration as the co-variant of the study. The sample was selected purposively from Teacher training institutes of Indore city. The experimental group consist of 59 students and the Traditional group consisted of 60 students. The age of students was ranged from 22-45 years. Achievement motivation is a dependent variable to the study, for assessing Achievement Motivation "Achievement –Motivation scale" developed by Deo-Mohan (1985), was used. Tolerance of Ambiguity is also a dependent variable of the study, for assessing Tolerance of Ambiguity "Tolerance of Ambiguity Scale" developed by P. Sarin (1985) was used. The personality was assessed with the help of "Kundu Introversion Extraversion Inventory" (KIEI), by Dr. RamnathKundu. The KIEI was designed for assessing introversion extroversion dimensions of the Personality. Study Habit Inventory developed by Mukhopadhyaya and Sansanwal (1983) was used. Level of Aspiration measure developed by Shah & Bhargava (1983) was used. The findings of the study are (i) Achievement –Motivation of students studying through Computer Managed Instruction and those studying through Traditional Instruction is independent of treatment when Pre Achievement- Motivation taken as covariate separately. (ii) Instruction Through Computer Managed Instruction Approach was Found To Be Significantly Effective in comparison to Traditional approach for development of Tolerance of Ambiguity of B.Ed. students.

Introduction

Present Education system faces many challenges in the field of Education. The covid -19 pandemic created a lot of challenges in the field of Education specially the plan of return students to physical classrooms has suffered. So the Present education system requires the Innovations in the field of Education. Innovations are required in Aims of education, Curriculum framing, Teaching methods, Teaching learning strategies, Evaluation Process etc. Information Communication Technology plays a vital role in the field of innovations which are required in the field of education like e-learning, on-line learning and platforms that we use for teaching learning process.

Information and Communication Technology

The term ICT is stand for information and communication technology. The word "communication" in singular form is concerned with human interaction, while the plural is generally refer to the whole field of data communications infrastructure. At its simplest, the singular form is the process or outcome while the plural is about the technology itself. The acronym ICT can also take as plural form (technologies) where it is entail the specific devices or processes which collectively make up the "technology". This pluralized form is sometimes written as ICTs. The term ICT must be seen as an evolution from the antecedent and more narrowly defined term IT (information technology) which maintains its usage in government, business, and industry and in relation to tertiary and other academic courses, dealing with such areas as programming, database design and expert systems.



Information and Communication Technology is trying to facilitate and enrich the traditional approach through new means and methods of teaching, modernize the process of learning. The technology used for the study, understanding, planning, design, construction, testing, distribution, support and operations of software, computer and computer related systems that exist for the purpose of data, information and knowledge processing is known as information and communication technology.

The Information Communication Technology is defined as-

According to Ito, Omoigui, et.al. (2011) ICT is the digital processing and utilization of information by the use of electronic computers. It comprises the storage, retrieval, conversion and transmission of information.

Types of Computer Related Instructional Programs-

Computer related instructional programs are mainly divided in four types. These Computer Assisted Instruction, Computer Based Instruction, Web Based Instruction and Computer Managed Instruction.

Computer Managed Instruction

A term employed to designate a system which uses the computer to help the teacher, administer and guide in the instructional process. In CMI the software program is framed. The whole process is managed, controlled and instructed by the computer according to the personalized needs. The term computer managed instruction CMI simply stands for instruction managed with the help of computer technology. In CMI the computer gathers, stores and manages information to guide students through individualized learning experiences. It directly calls for the services and applications of computers in the fields of instruction. The information of a student progress, who is working with the computerized program, namely his/her performance on every test items, keeping track of his mistakes and strengths and providing a valuable feedback etc., can all be managed effectively by the computer.

Objectives

The objectives of the present research work are as follows;

1. To compare the adjusted mean Achievement - Motivation scores of the students studying through Computer Managed Instruction with those studying through Traditional Instruction by taking pre achievement – Motivation scores, Personality, Study Habits, Level of Aspiration as covariate separately.

2. To compare the adjusted mean Tolerance of Ambiguity scores of the students studying through Computer Managed Instruction with those studying through Traditional Instruction by taking pre Tolerance of Ambiguity scores, Personality, Study Habits, Level of Aspiration as covariate separately.

Hypotheses

1 There is no significant difference between the adjusted mean Achievement - Motivation scores of the B.Ed. students studying through Computer Managed Instruction with those studying through Traditional Instruction by taking Pre Achievement–Motivation scores, Personality, Study Habits, Level of Aspiration as covariate separately.

2 There is no significant difference between the adjusted mean Tolerance of Ambiguity scores of the B.Ed. students studying through Computer Managed Instruction with those studying through Traditional Instruction by taking Pre Tolerance of Ambiguity scores, Personality, Study Habits, Level of Aspiration as covariate separately.

Sample

The sample was selected purposively from Teacher training institutes of Indore city, who studying in B.Ed. during academic year 2013-14 and they have Methods of Teaching Biological Sciences as one of the optional subject. The experimental group consist of 59 students these were from School of Education Indore and Annie Besant College of Education Indore during



year 2013-14. The Traditional group consisted of 60 students, these were from Khalsa college, Shivkumar- singh college, and Vaishnav college of Education affiliated to D.A.V.V. Indore and SDPS college situated in Indore and affiliated with University Mumbai. All students of Traditional Group were from B.ED. 2013-2014 academic session. The age of students was ranged from 22-45 years.

Tools

Achievement-Motivation and Tolerance of Ambiguity is dependent variables of the study and personality, study-Habit and level of aspiration is covariate of the study.

Achievement Motivation Scale-Achievement motivation is one of the dependent variable to the study for assessing Achievement Motivation "Achievement –Motivation scale" developed by Deo-Mohan (1985), was used.

Tolerance of Ambiguity Scale-Tolerance of Ambiguity is one of the dependent variable. For assessing Tolerance of Ambiguity, the scale "Intolerance of Ambiguity" developed by P. Sarin (1985), was used.

Personality Inventory-The personality was assessed with the help of "Kundu Introversion Extraversion Inventory" (KIEI), by Dr. RamnathKundu. The KIEI was designed for assessing introversion extroversion dimensions of the Personality.

Study Habit Inventory- For the assessing study habits of students, " Study Habit Inventory" developed by Mukhopadhyaya and Sansanwal (1983) was used. This inventory consisted of 9 different kinds of study behaviour.

Level of Aspiration Scale-For assessing Level of Aspiration the scale "Level of Aspiration measure" developed by Shah & Bhargava (1983) was used.

Procedure of Data Collection-

This study was experimental in nature. Six teachers training Colleges of Indore city M.P. were selected purposively for present research and randomly assigned as experimental group treated with computer managed instruction and control group treated with traditional approach. These treatments were continuing up to about 45 working days. The pretesting of achievement, and achievement-motivation was done. The study habit, personality and level of aspiration are covariates. They also tested during the treatment. As after completion of treatment, post achievement, and Tolerance of ambiguity were administrated to both the groups.

Data Analysis-

1.1.0 Comparison of Adjusted Mean Achievement-Motivation Score of Students Studying through Computer Managed Instruction with those Studying through Traditional Instruction by taking Pre Achievement-Motivation , Personality, Study- Habit and Level of Aspiration as Covariate Separately.

The second objective of the study was "To compare the adjusted mean scores of Achievement-Motivation of students studying through Computer Managed Instruction with those studying through Traditional Instruction by taking Pre Achievement- Motivation scores, Personality, Study- Habit, and Level of Aspiration as covariate separately." The data were analyzed with the help of one way ANCOVA. The results are given in Table 1.2.

Summary of one way ANCOVA for Achievement Motivation by taking Pre Achievement Motivation, Personality, Study-Habit and Level of Aspiration as covariate separately.

Covariate	Source of variance	Df	S.Sy.x	M.S.Sy.x	F
Pre	Treatment	1	399.54	399.54	1.25



Achievement	Error	117	37084	319.69	
Motivation	Total	119			
Personality	Treatment	1	1234.96	1234.96	3.11
	Error	117	46027.05	396.78	
	Total	119			
Study-Habit	Treatment	1	1270.95	1270.95	3.19
	Error	117	46027.05	396.78	
	Total	119			
Level of Aspiration	Treatment	1	793.16	793.16	1.20
	Error	117	46095.84	397.38	
	Total	119			

From Table 1.2, it can be seen that the F value for the treatment are 1.25, 3.11, 3.19 and 1.20 when Pre-Achievement-Motivation, Personality, Study-Habit and Level of Aspiration taken as covariate, these all are not significant at 0.05 level of significant with degree of freedom 1/117. It indicates that the adjusted mean score of Pre Achievement Motivation of Computer Managed Instruction group and Traditional approach students not differ significantly. Thus, the null hypothesis that “There is no significant difference between the adjusted mean scores of Achievement- Motivation scores of students studying through Computer Managed Instruction with those studying through Traditional Instruction by taking Pre Achievement-Motivation, Personality, Study-Habit and Level of Aspiration as covariate separately” is not rejected. Thus it can be concluded that Achievement –Motivation of students studying through Computer Managed Instruction and those studying through Traditional Instruction is independent of treatment when Pre Achievement- Motivation taken as covariate separately.

1.2.0 Comparison of Adjusted Mean tolerance of Ambiguity Score of the Students Studying through Computer Managed Instruction with those Studying through Traditional Instruction by taking Pre Tolerance of Ambiguity, Personality, Study- Habit and Level of Aspiration as covariate Separately.

The second objective of the study was “To compare the adjusted mean scores of Tolerance of Ambiguity of students studying through Computer Managed Instruction with those studying through Traditional Instruction by taking pre Tolerance of Ambiguity, Personality, Study Habit, and Level of Aspiration as covariate separately .” The data were analyzed with the help of one way ANCOVA. The results are given in Table 1.2.1.

In Table 1.2.1 Summary of one way ANCOVA for Tolerance of Ambiguity by taking Pre-Tolerance of Ambiguity, Personality, Study-Habit and Level of Aspiration as covariate separately.

Covariate	Source of variance	Df	S. Sy. x	M.S.Sy.x	F
Pre Tolerance of Ambiguity	Treatment	1	296.47	296.47	18.79**
	Error	116	1814.99	15.78	
	Total	118			
Personality	Treatment	1	2265.33	2265.33	31.62**
	Error	116	8237.40	71.63	
	Total	118			



Study-Habit	Treatment	1	2565.45	2565.45	36.51**
	Error	116	8081.92	70.28	
	Total	118			
Level of Aspiration	Treatment	1	2377.65	2377.64	33.14**
	Error	116	1798.03	19.71	
	Total	118			

From Table 1.2.1, it can be seen that the F value for the treatment are 18.79, 31.62, 36.51 and 33.14 when Pre-Tolerance of Ambiguity, Personality, Study –Habit and Level of Aspiration taken as covariate, these all are significant at 0.01 Level of significant with degree of freedom 1/116. It indicates that the adjusted mean score of Tolerance of Ambiguity of Computer Managed Instruction group and Traditional approach students differ significantly. Thus, the null hypothesis that “There is no significant difference between the adjusted mean scores of Tolerance of Ambiguity of students studying through Computer Managed Instruction with those studying through Traditional Instruction by taking Pre Tolerance of Ambiguity, Personality, Study-Habit, and Level of Aspiration as covariate separately” is rejected. Further, to know which group is superior, the adjusted mean score of Tolerance of Ambiguity of Computer Managed Instruction approach and Traditional approach students were compared and the results are given in Table 1.2.2.

Table 1.2.2 A Comparison of adjusted mean Tolerance of Ambiguity scores of the students studying through Computer Managed Instruction with those studying through Traditional Instruction by taking Pre Tolerance of Ambiguity, Personality, Study-Habit and Level of Aspiration as covariate.

S.No	Covariates	Adjusted mean scores of Tolerance of Ambiguity of Treatment	
		Computer Managed Instruction	Traditional approach
1	Tolerance of Ambiguity	67.88	64.49
2	Personality	70.58	61.69
3	Study-Habit	71.06	61.19
4	Level of Aspiration	70.65	61.62

Further, from table 1.2.2 it is clear that the adjusted mean score of Tolerance of Ambiguity of Computer Managed Instruction approach are 67.88, 70.58, 71.06, 70.65 and Traditional approach group are 64.49, 61.69, 61.19, 61.62 when Pre- Tolerance of Ambiguity, Personality, Study-Habit and Level of Aspiration are taken as covariate, these all reveals that the adjusted mean scores of Computer Managed Instruction approach is higher than the adjusted mean scores of Traditional approach group. Thus it can be concluded that, Instruction through Computer Managed Instruction approach was found to be significantly effective in comparison to Traditional approach for development of Tolerance of Ambiguity of B.Ed. students.

Finding

- Achievement –Motivation of students studying through Computer Managed Instruction and those studying through Traditional Instruction is independent of treatment when Pre Achievement- Motivation taken as covariate separately.



- Instruction through Computer Managed Instruction approach was found to be significantly effective in comparison to Traditional approach for development of Tolerance of Ambiguity of B.Ed. students when Personality, Study-Habit and Level of Aspiration are taken as covariate.

Research Implication

The educational implications of present research are as follows.

For Student Teachers

- Computer Managed Instruction is useful for the student to improve their achievement.
- As research finding indicate that there is no significant effect of treatment on study-habit, level of aspiration and achievement-motivation. So students from high and low study-habit, high and low level of aspiration and high and low achievement-motivation can opt any type of treatment without any hesitation.

For Teachers

- Teachers can use Computer Managed Instruction for the improvement of achievement of students.
- As research finding indicate that there is no significant effect of treatment on study-habit and level of aspiration. So teacher can use the Computer Managed Instruction for high and low study-habit and high and low level of aspiration students without any hesitation.
- Shortage of teachers can be use overcome by using Computer Managed Instruction
- Teachers can be use Computer Managed Instruction for remedial approach.
- Continuous testing and discrimination on the basis of Intelligence quotient provide chances of diagnosis of students.

For Parents

- Parents can motivate, their children's to use Computer Managed Instruction for the improvement of their achievement.
- As research finding indicate that there is no significant effect of treatment on study-habit, level of aspiration and low and high achievement-motivation. So parents can use their children's from high and low study-habit, high and low level of aspiration and high and low achievement-motivation opt any type of treatment without any hesitation.
- As Computer Managed Instruction provide flexibility of time and speed so parents with different kind of learner can use Computer Managed Instruction

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