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Effectiveness of Information and Communication Technology (ICT) In Teaching Computer Science at College Level

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ABSTRACT:- The study was carried out to determine the effectiveness of Information and Communication Technology(ICT) as compared to the traditional method of teaching in the subject of Computer Science at College level in Cuddalore District, Tamilnadu. Post-test equivalent group design experimental study was used for the statistical analysis of the research at 0.05 levels of significance. As the target population were the College students, a sample of Sixty four students were selected in such a way that Thirty two students were available for each group. Computer Science and Computer application under graduate students were equally divided into two equal groups based on their achievement in previous year marks. They are considered as Control group and Treatment group each having thirty two students. The students of experimental group were exposed to the teaching through ICT, whereas the students of control groups were taught through traditional method of teaching. The units taught to both the groups were C++, chosen from the syllabus prescribed by Thiruvalluvar University, Vellore, Tamilnadu for B.Sc. Computer science and Bachelor of Computer Application. ICT was found effective as compared to traditional method of teaching in Computer science achievement at college level.

Key words: *ICT, Computer science, traditional method of teaching*

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I. INTRODUCTION

The intention of education is to enable the students to produce their livelihoods as well as to become valuable member of society. Every learner is wants to choose his way of learning instead of more restricted class rooms and strict schools. Every teacher wants to make their student somehow. The present day learning theories insist upon mastery learning and through understanding. Many learning strategies are introduced to the students. And many teaching methods are formulated through research. We are marching toward learner centred approach. The ICT paved the way for paradigm shift in teaching learning process. The roles of teacher and learner are changed, the aim of education and philosophy of education also changed. ICT helps the education system in all its dimensions.

Information And Communication Technology (ICT):

ICT means diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. These technologies include computers, the Internet, broadcasting technologies (radio and television) and telephony. ICT gives multi-sensory input to the students. It will improve the retention of knowledge with the usage of ICT Effectiveness is the capability of producing a desired result or the ability to produce desired output.

II. NEED OF THE STUDY

The teacher efficiency is lies in the effectiveness of teaching. The application of ICT in classroom teaching should give clear understanding of subject matter and efficient reaping of knowledge. The traditional lecture method also produced lots of human resources from past century. The researcher wants to know the effective teaching method which brings increase in achievement.

OBJECTIVES OF THE STUDY

Following were the major objectives of the study:

1. To determine the effectiveness of Information and Communication Technology (ICT) on the academic achievement of students in Computer Science in College level as compared to the traditional method of teaching.

HYPOTHESES OF THE STUDY

1. There is no effectiveness of Information and Communication Technology (ICT) on the academic achievement of students in Computer Science in College level as compared to the traditional method of teaching.

III. MATERIALS AND METHODS

The study was carried out to determine the effectiveness of Information and Communication Technology (ICT) as compared to the traditional method of teaching in the subject of Computer Science at College level. The dependent variable in the study was the achievement in the academic scores of the students, whereas the independent variable was the teaching strategy. Sixty four students from Computer Science and Computer application under graduate courses were chosen. Both the groups were equated at their scores in the previous year examination in the subject Computer science. The students of control groups were taught through traditional method of teaching whereas the students of experimental group were exposed to teaching through ICT. To measure academic achievements of the sample students in the subject of Computer Science a teacher made post-test was administered instantly after completing the experiment/teaching to both the groups. The scores achieved by the students in the post- test were analysed with descriptive analysis differential analysis and Analysis of Covariance (ANCOVA).An achievement test was prepared by the researchers with the consultation of experienced Computer Science faculty in the same college form the topic C++ based on Thiruvalluvar University, syllabi. C++ is common for B.Sc. Computer science and Bachelor of Computer Application students. The test contained 25 items as a whole, in five dimension programming language, concept in C++, structure in C++compiler / Interpreter and commands in C++. The achievement test is in the form of eliciting type of responses i.e. Fill in the blanks. The time duration for the test was fixed as fifteen minutes for the both the groups.

IV. ANALYSIS AND ITERPRETATION

The researcher used descriptive, differential and Analysis of Covariance (ANCOVA) to prove or disprove the hypothesis through **IBM SPSS19.**

Table 1. Mean And Standard Deviation of environmental attitude of total sample

source	Mean	N	Standard deviation
Control group	18.94	32	1.73
Treatment group	22.69	32	1.63

The above table 1 shows the mean score and standard deviation of control group and treatment group in Computer science achievement of college students. It is found to be 22.13 and 1.73 respectively for control group. It is found to be 22.69 and 1.63 respectively for treatment group. **It is concluded that the student's achievement in treatment group is very high.**

Table-2 T test showing the effectiveness of ICT on achievement of students in Control and Treatment group

	Group	N	Mean	Std deviation	t-value	result
programming language	Control	32	5.31	0.64	-1.65	NS
	Treatment	32	5.56	0.56		
Concept in C++	Control	32	3.00	0.00	-3.94	S
	Treatment	32	3.50	0.72		
Structure in C++	Control	32	5.72	0.52	-6.39	S
	Treatment	32	6.63	0.61		
Compiler / interpreter	Control	32	2.50	0.67	-5.95	S
	Treatment	32	3.50	0.67		
Commands in C++	Control	32	2.41	0.71	-5.62	S
	Treatment	32	3.41	0.71		
Total	Control	32	18.94	1.34	-10.53	S
	Treatment	32	22.59	1.43		

Table 2 shows the independent *t*-test results. It's is found that the mean difference between control and treatment group's effectiveness in **programming language** achievement is statically **not significant**. The mean difference between control and treatment group's effectiveness in **Concept in C++**achievement is statically **significant.** The mean difference between control and treatment group's effectiveness in **Structure in C++** achievement is statically **significant.** The mean difference between control and treatment group's effectiveness in **Compiler / interpreter** achievement is statically **significant.** The mean difference between control and treatment group's effectiveness in **Commands in C++** achievement is statically **significant.** The mean difference between control and treatment group's effectiveness in **Total** achievement is statically **significant. It is concluded that treatment group is better than control group in concept in C++, structure in C++, Compiler / Interpreter, commands in C++ and total achievement**.

Table-3 ANCOVA analysis of the effect of ICT in Achievement on experimental group.

Dependent Variable:Treatment Score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Control	50.058	1	50.058	45.761	.000
Error	32.817	30	1.094		

a. R Squared = .604 (Adjusted R Squared = .591)

A one-way analysis of covariance (ANCOVA) was conducted for this study. The dependent variable was the student's Computer science achievement scores in treatment group and the covariate was the students' score on the control group. The ANCOVA was significant, F-values 45.761, df (1, 31), p (.000), (See Table 3). However, only 60% of the total variance in Computer science achievement scores was accounted for the treatment controlling for the effect of the students achievement scores.

V. CONCLUSION

Information and Communication Technology (ICT) shows effectiveness on the academic achievement of students in Computer Science in College level as compared to the traditional method of teaching. Except programming language in all other dimensions like concept in C++, structure in C++compiler / Interpreter commands in C++ and total score shows effectiveness of ICT in achievement scores. So the teachers working in higher education colleges must adopt latest technology in their class room teaching to increase the achievement of their students.

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