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Effect of ICT Based Model of Teaching on Student Achievement

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Abstract

The following research explores the effect of an ICT based model developed by the researcher integrating the theory of constructivism using the principles of student centered and active learning, collaborative learning, self learning, continuous assessments, reflective practice and justified use of technology through the medium of ICT on the achievement of the students. The researcher used an experimental method with a two group post test design to determine the effect of the ICT based model on academic achievement. The ICT based model proved to have significantly more effect on academic achievement than the traditional method of teaching.

1. BACKGROUND

Teacher training is understood as essential and key for the development of the knowledge society and in a more restricted area to reach success in the acceptance and implementation of ICT in the teaching. Despite the willingness of many teachers to defy difficulties and integrate ICT into their teaching procedures, still the use and deployment of ICT in teaching is far from being a reality. Fulton, K., Glenn, A. D., & Valdez, G. (2003), Only with a correct acquisition by teachers of both pedagogical and technological skill and proper competency will we be able to face the challenge that living in the society of knowledge supposes. Ideal integration of ICT into the teaching learning process requires access to ICT in the classroom, the motivation to use it but

most of all a practical pedagogical model of ICT integration. Enhancing educational quality is a constant process and is top priority. Education systems work to prepare the next generation for a successful future in a changing world, the knowledge economy of 21st century. Today, it is necessary to help teacher educators help teacher trainees who in turn help students develop the intellectual skills they need for a higher order of thinking and to assist them to realize their abilities and potential. And this is possible only through the medium of ICT. As educational institutions move towards the mainstream use of ICT in teaching and learning there appear to be some critical steps and vital ingredients needed for the successful infusion of ICT into educational environments. Although standalone computers have been in most educational institutions for more than two decades now, teachers continue to grapple with how to use ICT to enhance teaching and learning environments. There has been a growing recognition that technology used in the absence of a sound theoretical framework or pedagogy is generally not very effective in reaching programme goals. Laurillard (2002), Mishra and Koehler (2006) and Unwin (2007), for example, have cautioned against the use of ICTs without a conceptual framework or without a clear understanding of why and how the ICT will contribute to students' learning. These insights have led some educationists to realize that pedagogically sound integration of ICTs in lecturers' teaching requires more than technical support; it also needs professional up gradation for lecturers to use ICTs in their teaching and learning. ICT is developing at a rapid rate and one of the characteristics of ICT is its dynamism. It is difficult to set limits to what ICT can achieve as it is a constantly shifting frontier. ICT has the potential to change the shape of the classroom; change the relationship between teacher and learner; offer new tools to support new ways of teaching and learning; open up access to knowledge across distances through developments in bandwidth. Oblinger and Rush (1997) assert that technology allows a greater participatory and collaborative society. However, within higher education, the idea of active engagement of learners in rich learning tasks and the active, social construction of knowledge and acquisition of skills are still rare. There is a need to develop rich pedagogical uses of ICT that involves social, collaborative construction of knowledge. ICT offers more flexible and wider access to learning than was ever possible before. Teacher education has been slow to break with the traditional 'mould'. Notwithstanding the good points relating to the lecture mode, it is clear that teacher education institutes and teacher educators need to develop policy with respect to how ICT can be used to improve teaching and learning and to widen access to learning in a lifelong learning framework. The present research is a small contribution

in the large pedagogical change that is required to keep teacher education abreast with the rapid changes and growth in education due to ICT.

2. IMPORTANCE OF THE RESEARCH

The present research is an effort to fill the lacuna created by the absence of any specific pedagogical model for integration of ICT into the teaching of the theory courses in the B.Ed. curriculum. The present research is an endeavour to promote change from the topmost echelons of teacher training i.e., by integrating pedagogy and ICT into the curriculum transaction of B.Ed. course. Successful implementation of the pedagogically supported information and communication technology ICT based model of curriculum transaction on teacher trainees will help in improving the quality of teacher training being imparted in teacher training institutions. Bedar, A. K., Cunningham, D. Duffy, T.M., and Perry, J.P. (1995), the theory of constructivism is an important tool in enhancing effectiveness of learning. The theory of constructivism and its principles of active learning, collaborative learning, self learning, continuous assessments, reflective practice and justified use of technology on which the model developed by the researcher is based will find expression in day to day teaching thus putting ideal pedagogical theory into model practice.

3. TITLE OF THE RESEARCH

A study of the effect of an information and communication technology based model on academic achievement of students.

4. STATEMENT OF PROBLEM

To test the effectiveness of an information and communication technology based model on academic achievement of students.

5. OPERATIONAL DEFINITIONS

a) **Effect** - The difference in student achievement after teaching with ICT based model on experimental group and traditional method on control group.

b) **Information and Communication Technology Based Model - ICT based model -** The ICT based model developed by the researcher integrating the theory of constructivism using the principles of student centered and active learning, collaborative learning, self learning,

continuous assessments, reflective practice and justified use of technology through the medium of ICT in the curriculum transaction process.

c) **Academic Achievement –** Scores obtained by students in achievement test.

6. OBJECTIVES OF THE RESEARCH - To determine the effect of ICT based model on student achievement.

7. ASSUMPTIONS - It is assumed that the students have a basic level of ICT competency i.e., able to operate computers and use internet.

8. HYPOTHESIS

Research Hypothesis - H_1 - The ICT based model of curriculum transaction will produce better student achievement in achievement test than the traditional method.

Null hypothesis - H_01 - There is no difference in student achievement in achievement test between the ICT based model of curriculum transaction and traditional method.

10. SCOPE OF RESEARCH

- The study extends to students of B.Ed. Course.

11. LIMITATIONS OF THE RESEARCH

- The impact of the student I.Q., interest in learning, motivation for the session, and background knowledge on student achievement in achievement test has not been considered.
- The tools used for data collection are not standardized tools but have been developed by the researcher.

12. DELIMITATIONS OF THE RESEARCH

- The difference in student achievement of experimental group and control group is reflected by scores in achievement test only.

13. SIGNIFICANCE OF THE STUDY

Possibly the greatest contribution that this study brings is in its approach to remain relevant and withstand the rapid changes of technology. Other researches examining the adoption of ICT into mainstream learning have focused on what is done with technology rather than on its effect. Consequently, when the specific technology becomes obsolete, the research risks becoming

obsolete and its findings lose relevance. The findings of this study are expected to contribute to theoretical and methodological knowledge and give clear and useful advice and support relating to effective teaching through integration of information and communication technologies. This study identifies factors that optimize student learning outcomes in an ICT-rich learning environment. In doing so, it is expected that educational leaders, nationally and internationally, can better formulate strategies for developing ICT embedded curricula that support learning from a holistic approach.

14. METHODOLOGY OF RESEARCH

The present research has used experimental method of research and two group post test design.

15. RESEARCH VARIABLES

The sessions of the ICT based model of curriculum transaction is the independent variable of the research. Student achievement in content is the dependent variable of this research. The extraneous variables are Difference in achievement of teacher trainees, Teaching competency of researcher, Difference in expertise in handling the ICT tools required for the session in teacher trainees, Subjectivity in scoring the content test.

16. POPULATION - All students undergoing B.Ed. course of University of Pune

17. SAMPLE - 31 students in experimental group and 31 students in control group selected through purposive sampling.

18. RESEARCH TOOLS - Tool used for data collection was an Achievement Test and tools used for statistical analysis was Histogram, t-test.

19. PROCEDURE OF THE RESEARCH

- Selection of experimental group and control group
- Two equivalent groups were selected on the basis of 1st term exam results
- Experimental group sessions were conducted using ICT based model
- Control group sessions were conducted using Traditional method
- Preparation and finalization of an achievement test after following establishing reliability and validity.

- To determine the effect of ICT based model on student achievement an achievement test was conducted.
- Data collection - Administration of achievement test to both experimental group and control group after completing teaching.

20. FINDINGS OF THE RESEARCH

Group	N	Mean	Standard Deviation	df	T - Value	Level of Significance 0.01	Remark
EG	31	48.2	4.28	29	**16.96**	2.63	**H_0 Rejected H_1 Accepted**
CG	31	38.53	3.34				

Table 1 - Significance of Difference Of Mean of Experimental Group and Control Group on student achievement.

21. CONCLUSIONS OF THE RESEARCH

The performance of the Experimental group is better than the performance of the Control group in terms of student achievement and thus it can be concluded that teaching with ICT based model has more effect on student achievement than traditional method.

22. CONTRIBUTIONS TO KNOWLEDGE IN THE FIELD

The study has provided an evaluation necessary to guide the future development in the use of ICT-based models of curriculum transaction. In so doing, the study has made a contribution towards rapidly growing literature in ICT-based education.

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