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Impact of ICT on Achievement in Mathematics of Scheduled Tribes Students at Pachamalai Hills in Tiruchirappalli District

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Abstract: *Today's world is so fast and progressive due to advancement of science and technology which has made this world a global village. Like any other change, this advancement has its good and bad effects as well. Any event or happening occurring in one part of the world has quick effect on another. The study on Impact of ICT on Achievement in Mathematics; Experimental Method was used for the study. A sample of 68 scheduled tribes students was Control (34 students) and Experimental (34 students) groups from mathematics subject from government higher secondary schools at Pachamalai Hills in Tiruchirappalli District. Students can develop and demonstrate deeper understanding of mathematics concepts and are able to deal with more advanced mathematics contents than in 'traditional' teaching environments. It also significantly improves their achievement. It implies that ICT used teaching method proves to be more tangible in its effectiveness on achievement than the traditional classroom approach. It seems more practical and is widely acceptable to students. It suggests that ICT used teaching method contributes towards raising the achievement of students in Mathematics.*

Key words: ICT, Achievement in Mathematics, Scheduled Tribes Students, Pachamalai Hills.

Introduction: Teaching and learning in the 21st century should be markedly different from earlier times, as to teaching and learning are now occurring in an increasing online world. Traditionally, learning environments were restricted to face-to-face delivery or where distance education was undertaken, delivery was largely characterized by the posting of printed resources and communication were often slow and cumbersome. Integrating technology into teaching- learning transaction has been found to transform the teacher's role from being the traditional 'Sage on the Stage' to also being a 'Guide on the Side,' and students' roles also change from being passive receivers of content to being more active participants and partners in the learning process.

Technology is starting to be seen as the driving force of progress and education is promoted as a means to change from an industrial age to an emerging information age. Schools are under pressure to provide access to the educational technology as quickly as possible. School is the nucleus of learning and epicenter for development of any society and nation. The secondary schools in India work in a variety of academic and social contexts. Providing schools with ICTs promises a high return on

investment and Information and Communication Technology (ICT) is the faster growing field in India.

A majority of scheduled tribe students felt problems in learning of English and Mathematics due to poor handwriting, and due to lack of textbooks. However, a small proportion complained about the partial and biased attitudes of their colleagues also. Analyzing the nature of educational hardship of scheduled tribes, Most of the students felt difficulties in completing their homework due to lack of guidance/ help available in the family. ST students usually hesitate to go to their teachers for guidance and help.

Need of the study

In today's world, teachers need to be equipped not only with subject expertise and effective teaching methodologies but with the capacity to assist students to meet demand of the emerging knowledge based society with new forms of ICT and need to have the ability to use that technology to enhance the quality of learning. The search for ways to integrate technology into mathematics education is influenced by two main factors. First is the explosion of technologies that is influencing all aspects of life and the development of human resource. Knowledge-based workers need to be technology as well as having critical and creative thinking skills. Second is the mathematics education reform that is now emphasizing the development of mathematics processes. With the emphasis on mathematical process, the scope of the use of technology in the mathematics classroom has, in fact, widened. With technology, tedious computations are easily performed, multiple examples of geometric figures effortlessly produced. Coupled with vivid visuals, technology thus provides an approach of realizing classroom lessons that encourage mathematics thinking.

Students can develop and demonstrate deeper understanding of mathematics concepts and are able to deal with more advanced mathematics contents than in 'traditional' teaching environments. During the last two decades, researchers have become increasingly aware of the important role teachers play for student achievement, with the implicit assumption that better teacher performance in terms of mathematics content knowledge, pedagogy and technology integration in combination with knowledge about research outcomes would sufficiently prepare teachers for an easy and effective integration of new technology into their classrooms. The need for study on effect of ICT on student's achievement in mathematics at secondary level of schooling.

Review of Related Literature Study

Subbaiah (2004) carried out a study on the "Application of ICT in English Language Teacher Education" In this study he developed a multimedia package on analytical writing in English.

Siva Pillai (2003) in his paper entitled "Teaching Tamil Using ICT in the UK A perspective Study" explores the possibility of ICT in teaching and learning Tamil in the United Kingdom. It finds that ICT can solve the issues related to teaching Tamil in UK.

Sundhradevi et al (2001) developed a multimedia package for the mathematics for 4 standard Children and conclude that learning through multimedia has increased the achievement of the learners better than learning through lecture method.

Statement of the Problem

Impact of ICT on Achievement in Mathematics of Scheduled Tribes Students at Pachamalai Hills in Tiruchirappalli District.

Objectives of the Study

- ❖ To study the effect of traditional teaching on the students achievement in mathematics.
- ❖ To study the comparative effect of ICT used teaching and traditional teaching on the students’ achievement in mathematics.
- ❖ To study the relationship between students achievement and their confidence level in answering the test items on both the groups of students.

Hypotheses of the Study

- ❖ There is no significant difference in pre-test score between control group (Traditional method of teaching) and experimental group (using ICT).
- ❖ There is a significant difference between the Achievement scores of the control group (Traditional method of teaching) and experimental group (using ICT) as measured by the post-test.

Research Methodology & Sample

Experimental Method was used for the study. A sample of 68 scheduled tribes students was Control (34 students) and Experimental (34 students) groups from mathematics subject from government higher secondary schools at Pachamalai Hills in Tiruchirappalli District.

Data Analysis

Hypothesis-1

There is no significant difference in pre-test score between control group (Traditional method of teaching) and experimental group (using ICT).

Table-1

MEAN, STANDARD DEVIATION AND ‘t’ VALUE OF PER-TEST MEAN ACHIEVEMENT SCORES OF EXPERIMENTAL GROUP AND CONTROL GROUP					
GROUP	No of Students	Mean	S.D	‘t’ Value	Level of significance at 0.01 level
Control group	34	15.588	2.966	0.162	Not significance
Experimental group	34	15.471	2.351		

From Table-1, it is evident that there is no significant difference between the per-test mean scores of the control group and Experimental group. Therefore; two groups are similar in terms of their pre-test performance before the application of the treatment. Hence the control group and Experimental group in the present study were matched before the Experimental treatment as shown in Table-1 though, the control group had a slightly higher mean score (15.588) in the per-test than the experimental

group (15.471). Hence, the null hypothesis is accepted. This indicates that the Control group and Experimental group students did not differ much in their Achievement scores before the treatment.

Hypothesis-2

There is a significant difference between the Achievement scores of the control group (Traditional method of teaching) and experimental group (using ICT) as measured by the post-test.

Table-2

MEAN, STANDARD DEVIATION AND ‘t’ VALUE OF POST-TEST MEAN ACHIEVEMENT SCORES OF EXPERIMENTAL GROUP AND CONTROL GROUP						
GROUP	No of Students	Mean	S.D	‘t’ Value	Level of significance at 0.01level	
Control group	34	20.147	2.463	6.931	Significance	
Experimental group	34	24.765	2.618			

The Result in Table-2, show that the mean score obtained by the experimental group is much higher (24.765) than that obtained by the control group (20.147) in the post-test. Hence, students of experimental group showed a tremendous improvement in the post test scores after the intervention. Further, when the significance of the mean difference between the two groups was tested, t-value thus, computed was 6.931 which is more than the table value of at 0.01 level, indicating a significant difference between the mean post-test scores of experimental and control groups. Hence, the Null hypothesis is accepted. This indicates that the Control group and Experimental group students differ much in their Achievement scores after the treatment.

Findings of the Study

- ❖ The results arrived during this study show that the post-test achievement means scores of experimental group and control groups, differ significantly in favour of the experimental group. This implies that the students who were taught using ICT method of teaching show significant improvement in their achievement in Mathematics than the students who received instruction through the traditional method. It suggests that ICT used teaching method contributes towards raising the achievement of students in Mathematics.
- ❖ A significant difference has been observed between the mean achievement of pre-test scores and post-test scores of control group related to their academic achievement.
- ❖ A significant difference has been observed between the mean achievement of pre-test scores and the post-test scores of experiment group related to their academic achievement.
- ❖ The group of students taught through ICT used method show significantly higher means gain in achievement than the group of students taught through traditional method.
- ❖ Culturally morally tribes are very rich in their life, belongingness, we feeling, cohesion, sympathy and cooperation are some of the basic characteristics of

being a tribal. While dealing with the variable, teacher's perception regarding attitude of tribal students towards school and education above cited fact is verified by the opinion of teachers saying *"Tribes are very active in Digital Learning"*.

Educational Implications

The present research shows that in changing from a traditional 'Chalk and talk' method to an ICT used teaching method not simply enriches class room teaching, It also significantly improves their achievement. It implies that ICT used teaching method proves to be more tangible in its effectiveness on achievement than the traditional classroom approach. It seems more practical and is widely acceptable to students. It also reduces individual differences and enables all types of students to perform better. It has many other advantages.

- ❖ ICT can be used as a substitute for almost anything in the class: pencil, book, TV, encyclopedia, map, library and many more.
- ❖ ICT can be used as a supplement in a large group classroom teaching. It is easier to monitor students in ICT than in the traditional classroom setting.
- ❖ Important skills such as critical thinking, creative problem solving and synthesis of knowledge can easily be accomplished through ICT used learning in the class.

Conclusion

The study provides potential inputs for teacher education. Given the current wide spread use of ICT at all levels and for all subjects, it is imperative that pre-service teachers should learn the new technology. Besides pre-service training of teachers in the making, in-service training may also be given to the existing teachers to refurbish their acumen for teaching that is teaching effectively and meaningfully

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