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A STUDY ON EFFECT OF E-LEARNING AND TRADTIONAL LEARNING ON ACHIEVEMENT IN MATHEMATICS

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Abstract

This study examines the effect of e-learning and traditional learning on achievement in mathematics. This study provides descriptive data on students' achievement in mathematics from their learning (e-learning/traditional). The sample constitute of 266 students drawn from five schools from Pondicherry. Random sampling technique is adopted to select the sample. The researcher conducted pre-test on four concepts in mathematics. Based on the pre-test score, students were divided into two groups, students learning by Traditional method (group A) and students following the E-learning method (group B). Group A was subjected to the traditional class room teaching and group B was exposed to E-learning process. After teaching, the researcher conducted the post-test for all the 266 students. The answer scripts were evaluated and the scores obtained by each individual were tabulated concept-wise. The findings of the study indicate that E-learning students performed better than the traditional learning students. There is significant difference between E-learning and Traditional learning methods. Comparing the performance of English and Tamil medium students following the e-learning method, it is found that the English medium students performed better than Tamil medium students.

***Key words**: E-learning, traditional learning*

INTRODUCTION

Mathematics is the foundation of science and technology that have made our life more rapid, sophisticated and of comfort. Mathematics is used in a number of areas, because it provides a precise way to describe complicated situation and analyses difficult problems.

That is why Kothari Commission (1966) rightly recommended the study of mathematics compulsory for all, for the first ten years of schooling. The new technologies have brought about changes in pedagogy and curriculum content and have been instrumented in increased academic productivity and teaching effectiveness. E-learning from end to end the web world has opened up a lot of opportunities for the people. There are more than a few benefits associated with e-learning. For students it acts as boon in getting knack of easier said than done topics as well as saving time. For teachers e-learning helps in learning the right skill required to teach students. Many schools nowadays are turning up the web world and teaching students online which has changed the entire spectrum of teaching methods. This medium of e-learning has made studying very easy. One can study at their own set time and place.

Need of the study

The most important fact that emerges out of the state schools is that usual complaint that children find mathematics learning to be most difficult and most significant. In this competitive world the parents tend to go from pillar to post, to find mathematics experts to provide extra guidance and coaching to their wards. With the high expectations of their children securing top marks in subjects like mathematics. At all levels mathematics teaching develops spirit of enquiry required for any walk of life. In our country, the parents are very particular to send their children to professional courses like engineering, medicine, charted accountancy, master of business administration, etc. The school, the parent and the significant others keep thinking only of these professions for themselves, whatever may be the marks secured in mathematics and the other relevant subjects.

The first and the most important reason for not learning mathematics is poor teaching. Teaching is ineffective because it is inadequately planned and sometimes exhibit violations of learning. Some teachers are poorly motivated. Some teachers teach the subject (Mathematics) rapidly without giving time to think. Some teachers ignore the fact that pupils are individuals with varied backgrounds, talents and interests and attempt to teach everyone the same material, the same rate, in the same way. In this age of rapid change and uncertainty, teachers need to adapt to change if they are to survive and keep pace with new methods and technologies.

Objectives

To study the differences in the achievement in mathematics of the students with respect to the method of teaching (E-learning/Traditional)

To study the mathematics achievement of the students with respect to gender and medium of instruction (English/Tamil)

To study the interaction effect of method of teaching and gender / medium of instruction of the XI standard students on their post test scores in mathematics

Limitations

1. The study is restricted to a sample chosen only from Pondicherry
2. The investigation is restricted to XI standard students
3. The pre-test and post-test questionnaire is prepared by the investigator

Design of the study

Descriptive method of research is appropriate to study the Effect of E-learning and Traditional learning on achievement in mathematics of XI standard students.

Sample

The sample constitute of 266 students drawn from five schools from Pondicherry. Random sampling technique is adopted to select the sample.

Tools Used

The investigator adopted the questionnaire method which falls under the preview of inquiry method.

1. Study material – XI standard mathematics text book by government of Tamil Nadu
2. For the pre-test and post-test, the investigator used the questionnaire method
3. The investigator also collected the personal information of the students using questionnaire method

Collection of data

The reformulated test paper was administered to all 266 students based on four concepts namely Trignometrical equations, Properties of triangles, Solutions of triangles, Inverse trignometrical functions. The researcher evaluated all the answer scripts carefully. The scores obtain were tabulated systematically for each student, considering the scores obtained concept-wise and also the total score for all the four concepts taken together. Based on the pre-test score students were divided into two groups, students learning by Traditional method (group A) and students following the E-learning method (group B)

Group A was subjected to the traditional class room teaching, revolving around the lecture method and group B was exposed to E-learning process which was basically "interactive" in nature with total multimedia support. The E-learning students had the advantage of acquiring more knowledge related to the topic. After teaching, the researcher conducted the post-test for all the 266 students. The answer scripts were evaluated and the scores obtained by each individual were tabulated concept wise and also for the entire questions (40) covering all four concepts.

Analysis of data

The entire data collected in order to study the Effect of E-learning and Traditional learning on achievement in mathematics of XI standard students with respect to gender, medium of instruction. The data were analyzed with the help of mean, standard deviation, t-test, F-test techniques of the statistics. The descriptive analysis, differential analysis and two-way ANOVA were carried out based on the objectives and hypotheses of the study.

Table: 1 Consolidated post-test results with respect to method of learning

Post test total scores	Method	
	E-learning	Traditional learning
N	131	135
Mean	20.97	19.96
SD	5.786	5.364
t	1.96*	
Significance	0.05	

The above table shows that there is no significant differences in post test total mean score of the students in traditional learning and e-learning at 0.05 level of significance.

Table 2: Consolidated post-test results with respect to gender

Post test total scores	Gender	
	Girls	Boys
N	95	171
Mean	20.30	20.59
SD	5.235	5.843
t	0.548	
Significance	NS	

The above table shows that there is no significant differences in post test total mean score of the boys and girls at 0.05 level of significance.

Table: 3 Consolidated post-test results with respect to Medium of instruction

Post test total scores	Medium	
	English	Tamil
N	129	137
Mean	22.68	18.33
SD	5.385	4.91
t	9.100**	
Significance	0.01	

The above table shows that there is significant differences in post test total mean score mean score of the English medium and Tamil medium students at 0.01 level of significance

Table: 4 Interaction between the method of learning and gender on the post-test total scores of the students

Source	df	Sum of squares	Mean Square	F	Significance
Method	1	234.91	234.91	7.33	Sig
Gender	1	20.55	20.55	0.64	NS
Method&Gender	1	234.91	234.91	7.33	Sig
Error	262	14808.11	32.05		
Total	265	14711.897			

The above table shows that there is significant interaction between the method of learning and gender on the post test total scores of the students

Table: 5 Interaction between method of learning and medium of instruction on the post-test total scores of the students

Source	df	Sum of squares	Mean Square	F	Significance
Method	1	70.88	70.88	2.714	Sig
Medium of Instruction	1	2164.11	2164.11	82.85	Sig
Method & Medium of Instruction	1	3758.57	3758.57	143.90	Sig
Error	262	12065.99	26.12		
Total	265	14546.94			

The above table shows that there is significant interaction between the method of learning and medium of instruction on the post test total scores of the students

Major Findings of the Study

1. E-learning students performed better than the traditional learning students in their post-test total mean scores. There is significant difference between E-learning and Traditional learning methods. Hence it can be inferred that the achievement level of the students depends upon the method of teaching and learning. The achievement level of E-learning students is more than that of the traditional learning XI standard students in mathematics.
2. Achievement level of XI standard students in learning a topic in mathematics is irrespective of gender difference
3. Comparing the performance of English and Tamil medium students following the e-learning method it is found that the English medium students performed better than Tamil medium students
4. Comparing the performance of English and Tamil medium students following the traditional learning method it is found that the English medium students performed better than Tamil medium students
5. E-learning English medium students performed better than the English medium students following Traditional method

Educational Implications of the study

- Need to provide e-learning facility
- Need to translate into Tamil

- Need to reduce the dropouts
- Need to reduce the burden of government on education
- Need to make learning student centred
- Need to extend learning beyond time and space

Conclusion

E-learning is an essential tool for learning mathematics in the 21st century, and all schools must ensure that all their students have access to technology. Effective teachers maximize the potential of e-learning to develop students' understanding, stimulate their interest, and increase their proficiency in mathematics. When e-learning is used strategically, it can provide access to mathematics for all students. It may be concluded that the achievement level of the XI standard students in mathematics depends heavily upon the method of teaching. It has been inferred by this study, to improve the achievement level of the XI standard students in mathematics, e-learning must be implemented in teaching learning process. This study shows that the achievement level of girls is higher in e-learning and boys in traditional learning. It can also be concluded that the achievement level of students in e-learning does not depend on gender difference. The finding of the study also shows that, on the whole, the achievement level of English medium students is higher than the Tamil medium students. There is an urgent need to improve the achievement level of the school students' particularly Tamil medium schools, using the major findings of the study, supported by e-learning and other web-based teaching-learning technique.

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