Impact of Computer Aided Learning on Achievement level of Students in Science at Upper Primary Level

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1. Introduction

Science is something that is to be learned by every child as the modern civilization is based on scientific discoveries and inventions. Our children should be taught in a way in which they are interested in finding out the laws of nature and also developing interest in knowing the secrets of nature which is the basis of scientific progress. Science helps to learn necessary skills that children can use in other areas of their lives. Concrete experiences help children to develop problem-solving skills, critical and creative thinking so that they can analyse and motivate them towards a lifelong interest in their surroundings.

The target of universalization or education for all (EFA) is still far away from our upper primary education. The result of inherent weakness of the social and educational system is so serious that we have not been able to get rid of the problems of wastage and stagnation and drop-outs. These problem is even acute and alarming in the people, belonging to the weaker and culturally disadvantaged section of the society. Effective use of media and technology in education system is now a burning era in educational technology. Keeping the view of advantages of teleconference, television broadcasting, television and other instructional strategies for facilitating learning outcomes in the part of learners with full supports of psychological factors promoting learning problem has been taken. So, to study the Effect of instructional strategies towards achievement and their interaction with sex of the learners, are really worthwhile.

It is assumed that the concepts get develop by practice only so, very little or no emphasis is laid on developing the skills or concepts among the students. Some of the students develop the conceptual framework for particular type of problems. They find those problems easy and Science for them becomes very interesting subject. But some of them just try to mug up concepts of Science like their other subjects. These students find the subject to be the most difficult subject. In schools the environment is rarely conducive to learning.

Children do not enjoy going to class and are reluctant to undertake the tasks generally assigned by teachers. There is frequently an atmosphere of boredom and apathy both on the part of teachers and of students. Many children are unable to understand this subject. These students find the subject to be the most difficult subject. Sometimes it is observed that the students studying in class VII do not show the appropriate performance. CAL technology is especially important in such environments since it enables learner engagement.

The researcher, to find the factor behind these differences takes an initiative to study the "Impact of Computer Aided Learning on Achievement level of Students in Science at Upper Primary Level" presently studying in class VII. The aim of the study was to find out the differences between the achievement scores for different groups. So there is a need to make an attempt to find out reasons for the difference between the levels of achievement in Science at standard VII for different teaching methods.

2. Objectives

- To study the achievement level of class VII Students before any kind of treatment
- To find out the relationship/ difference of class VII Students in terms of Traditional Group and CAL Group in their achievement levels before treatment
- To study the achievement level of class VII Students after treatment
- To find out the relationship/ difference of class VII Students in terms of Traditional Group and CAL Group in their achievement levels after treatment

3. Hypothesis

- There is no significant difference of class VII Students in terms of Traditional Group and CAL Group in their achievement levels before treatment
- There is no significant difference of class VII Students in terms of Traditional Group and CAL Group in their achievement levels after treatment
- There is no significant difference of class VII students in terms of Traditional Group in their achievement levels before and after treatment

4. Methods & Procedure

200 students of class VII including both boys and girls was randomly taken as sampled group. A pre-test of science was conducted for these students. The test comprises of 30 MCQ i.e. multiple choice type questions from three different areas of science. After treatment a post-test parallel to pre-test having 30 multiple choice type questions from same areas of science as pre-test was also conducted. Pre-test Post-test control group experimental design was used for testing above hypotheses of the study. The following components were included in the design.

O	X1 **Instruction through**	O
Group 1 **Pre-Test**	Traditional Method i.e. lecture followed by discussion	**Post-Test**
Group 2 **Pre-Test**	CAL followed by discussion	**Post-Test**

Data were collected in two phases. In first phase pre-test was administered and after that, in second phase post test was administered. Both pre & post test was administered to the students with clear instructions for recording their responses and was requested not to leave any question without attempting it and also with this direction that their scores were used for research paper & were not disclosed. Scoring key was prepared for both the tests and marking has been done as per scoring key. Scoring of responses was done as per scoring key. Data was tabulated school wise for analysis. Statistical techniques i.e. Percentage, Mean and t-test were used for analyzing of tabulated data.

5. Results & Discussion

Table No. 1: Comparison between scores of all students for pre-test scores for both traditional & CAL group

	PATTERN	N	Mean	Std. Deviation	Std. Error Mean
PRE_TEST	CAL	100	9.49	4.478	0.469
	TRADITIONAL	100	9.88	4.319	0.44

As mentioned in the above table average mean scored by all students of both group in pre-test is 9.49 while average mean scored by all students in pre-test is 9.88. Mean score of pre-test of all students for both groups is just equal to the mean of the pre-test scores of all students for both groups. It shows that achievement level of the all students for both groups is same at the time of pre-test.

Table No. 2: t-value between scores of all students for pre test scores for both traditional & CAL group

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	T	Df	Mean Difference	Std. Error Difference
PRE_TEST	Equal variances assumed	0.356	0.551	0.607	198	0.39	0.642

As mentioned in the above table our calculated t value is 0.607, df = 198 and the table value for the 0.01 and 0.05 level with 198 df is 2.60 and 1.97 respectively. Since 0.607 > 2.60 & 1.97, there is significant difference **between scores of all students for pre test scores for both traditional & CAL group**.

Table No. 3: Comparison between scores of all students for post test scores for both traditional & CAL group

	PATTERN	N	Mean	Std. Deviation	Std. Error Mean
POST_TEST	CAL	100	24.09	5.344	0.566
	TRADITIONAL	100	14.01	6.330	0.636

As mentioned in the above table average mean scored by all students of CAL group in post-test is 24.09 while average mean scored by traditional group in post-test is 14.01. Mean score of post-test of CAL group students for is just 1.75 times to the mean of the pre-test scores of traditional group students.

It shows that there is a great difference in achievement levels of the CAL group students and traditional group students at time of pre-test. This difference is due to different methods of teaching.

Table No. 4: t-value between scores of all students for pre test scores for both traditional & CAL group

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	T	Df	Mean Difference	Std. Error Difference
POST_TEST	Equal variances assumed	1.039	0.309	11.727	198	10.080	0.860

As mentioned in the above table our calculated t value is 11.727, df = 198 and the table value for the 0.01 and 0.05 level with 198 df is 2.60 and 1.97 respectively. Since 11.727 > 2.60 & 1.97, there is significant difference **between scores of all students for pre test scores for both traditional & CAL group**.

6. Conclusion and Implications of the study

The finding of this study is that "the mean post test scores of the experimental groups were higher than the control group", which indicated that the CAL instructional method of teaching science have a positive and significant effect on the academic achievements of the students of 7th class. Although the students taught by the Traditional instructional method scored high performance but not a predicted level thus, based on the results it is recommended to use a combination of CAL and Traditional instructional method at upper primary level.

One of the main finding is "that CAL is more effective than traditional instruction". It has shown that CAL improved student science performance and attitude. The Research studies have also found that CAL improves instruction for students because students receive immediate feedback, and the programs let students know whether their answer is correct. CAL helps students to moves at the own pace and usually does not move ahead until they have mastered the skill. CAL improved number combination skills among children with concurrent risk for mathematics disability and reading disability. As the programs are interactive and learner centered CAL helps to capture the students' attention. It is focused on the learner rather than the teacher and on learner active mastery of material through interactive learning and teaching. Research has shown that effective use of multimedia or interactive Web-based modules can increase student learning. Students who used the tutorial performed better on a quiz than did students who completed the standard laboratory, supporting the effectiveness of this freely available online tutorial.

An analysis of result clearly shows that any type of teaching method increases the achievement level of students. It may be due to the interaction and discussions. In present study result shows that CAL is more effective than traditional methods of teaching of science. It may be due to the important features of CAL or its different type of pedagogy. In a CAL classroom students, and indeed even teachers, are enthralled by the multimedia presentation, and by the games and puzzles programmed to stimulate interest and increase challenge. Keeping these views from endpoint analysis it has become necessary to implement different teaching methods, strategies, tactics in teaching learning process to fulfill the future demands of the society.

Investigations of the use of CAL to improve student's science knowledge are only just beginning. A further study is needed to see whether CAL impacts students learning outcomes in other content areas. In addition, future research should compare student's perceptions of teaching science with CAL. The findings would be helpful for designing science teacher education programs. However, some major limitations of the study should be noted. The first limitation of this research project was that the test consisted of only three science concepts. Future studies could add more questions to make sure the results are accurate. The second limitation of this research project was that 200 students were used. Third, students from only from two schools and one instrument were used in the investigation. Future studies could involve more institutions and compare the outcomes. Lastly, a limitation of this research project was that the CAL emphasized only three topics. Future studies could add more topics and more subjects.

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