

Effectiveness of Multimedia Package for Enhancing Achievement in Computer Science among XI Standard Students

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Abstract: In the current age of science and technology world become vital changing rapidly. The life of human being has changed as it was in the past. The educational skills consider the effective use of technological tools in teaching and learning. The current study is an attempt to find out the effectiveness of Multimedia package over the traditional method of teaching on the achievement of computer science among higher secondary school students. The sample consisted of 60 higher secondary Computer science students. The results of T-test analysis of the post-test mean achievement test revealed that there was a statistically significant difference between achievement level of computer science students of control group and experimental group. Analysis of the data exposed that students taught through the Multimedia instructional package performed better than those who were taught through existing method of teaching.

Index terms: Multimedia Package, Computer science, Standard Deviation, Traditional Method, Effectiveness

I. INTRODUCTION

Information technology is gradually invading each and every area of modern civilization. Integration of information and communication technology [2] is necessary to meet challenges of the new decade. In the current scientific and technological age the conventional method was not suitable to arouse interest among the students and does not wants up to the intellectual, psychological and emotional needs of the students in the new millennium [1]. The conventional method of teaching is based on giving information as bits. It includes rote memorization of concepts facts and principles, which do not realize objective of marketing teaching. Teaching strategies [7] play an important role in enhancing the learning abilities of the students. It has to be lamented however that instruction in the higher secondary classroom continues to be dominated by teachers talk, minimum student participation and teacher control as is evidenced by a number of research studies. New interesting and innovative methods should be followed for effective teaching.

II. MULTIMEDIA

Multimedia package in education is a format to presenting information using a combination of images, sound, audio and text. Multimedia package using computer science subject for activities encourage students to work in groups, express their knowledge in multiple ways, solve programming problems, revise their own work, and construct knowledge. Multimedia package will be helpful to increase student's retention and create interest of learning computer science subject. Multimedia to develop various skills and promote students personality, self-esteem, self-control and developing high level order of thinking. In the classroom multimedia can bridge the gap between theory and practice by giving students the opportunity to practice what they have learned in safe and controlled environment. The higher secondary school curricula include multi-media presentations as a required skill for students.

Multimedia package [3] [6] holds better assure in enhancing learning as well as in improving the quality of education. Multimedia the form and pattern of interaction among learners, teachers and resources, the type and variety of resources to support study and communication; the goal or outcome of the educating process and the method used to measure achievements and success.

The effectiveness of multimedia [4] [5] in teaching always depends upon the variety of the methods adopted by the teacher. The teacher should be able to use and combinations of various methods, devices and techniques to make the lesson more effective. This study tries to investigate the effectiveness of multimedia package in the teaching of Computer science at higher secondary level.

III. RATIONALE OF THE STUDY:

In our classroom have diverse learner's settings so teachers to face some problem of teaching through the traditional method. There should be change and present the information to other ways to teaching computer science. Due to presence of individual differences among the students using same method not impact of learning. So Teachers have to adapt the new strategies and new techniques in the classroom teaching. Consider the multimedia approach in the classroom for teaching and learning process to get better learning outcome for students. Multimedia will provide multi-sensory experience and attain mastery over the computer science content and subject. Multimedia generates a lot of excitement as learning it crosses traditional boundaries of school, work place, and enabling students choose their learning materials in their own time and at their own pace. Programming language skill helps the students to developing good applications various fields

such as Space, Medicine, Education, Transportation, etc. The Computer students of today are tomorrow's computer scientists, Computer engineers, Software Developers, Programmers, and teachers at the different levels. The present study tends to examine how the use of modern instruction techniques like multimedia packages, would help to boost the Achievement and Interest of students in computer science.

IV. OBJECTIVES OF THE STUDY

1. To develop the multimedia package in computer science subjects.
2. To find the significant difference in the pre-test and post-test mean scores of computer science students of Control group.
3. To find the significant difference in the pre-test and post-test mean scores of computer science students of Experimental Group.
4. To find the significant difference in the post-test mean scores of computer science students of Control Group and Experimental Group.

V. HYPOTHESIS

1. There is no significant difference in the pre-test and post-test mean scores of computer science students of Control group.
2. There is no significant difference in the pre-test and post-test mean scores of computer science students of Experimental Group.
3. There is no significant difference in the post-test mean scores of computer science students of Control Group and Experimental Group.

V. SAMPLE

The study was carried out on a sample of 60 computer science students of XI standard of higher secondary school students was selected purposively from two schools of Salem district. The Control group consists of 30 students and experimental group consists of 30 students.

VI. METHODOLOGY

In this study investigation, the researcher had adopted the experimental method for parallel group design as control and experimental group and also to find the facts through the collection data and analysis of data given the representation of the phenomenon under the study.

VII. TOOLS USED FOR THE STUDY

- Achievement test were constructed to assess the entry level behavior and performance of the total sample.
- Multimedia package was constructed and used for the effectiveness testing in this experimentation study.

VIII. STATISTICAL TECHNIQUES USED

Statistical techniques serve the fundamental purpose of the description and inferential analysis. The following statistical techniques were used in the study are Mean, Standard Deviation and T-Test.

1. Mean

The Mean, Median and Mode are the arithmetic average of a data set. This is found by adding the numbers in a data set and dividing by how many numbers there are

$$\bar{x} = \frac{\sum x}{N} \quad (1)$$

Here \sum represents the summation, X represents scores and N represents number of scores.

2. Standard deviations (SD)

Standard deviation is a measure that is used to quantify the amount of variation or dispersion of a set of data values. A low standard deviation indicates that the data points tend to be close to the mean of the set, while a high standard deviation indicates that the data points are spread out over a wider range of values.

$$S = \sqrt{\frac{\sum_{I=1}^N (x_I - \bar{x})^2}{N-1}} \quad (2)$$

Where $\{x_1, x_2 \dots \dots, x_N\}$ are the observed values of the sample items, \bar{x} is the mean value of these observations, and N is the number of observations in the sample

3. T-TEST

The t-test is any statistical hypothesis test in which the test statistic follows a Student's t-distribution under the null hypothesis. It can be used to determine if two sets of data are significantly different from each other, and is most commonly applied when the test statistic would follow a normal distribution if the value of a scaling term in the test statistic were

known. T-test uses means and standard deviations of two samples to make a comparison. The formula for T-test is given below:

$$T = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \tag{3}$$

Where, \bar{x}_1 represents the Mean of first set of values, \bar{x}_2 represents Mean of second set of values, S_1 represent the Standard deviation of first set of values, S_2 represents Standard deviation of second set of values, n_1 represents Total number of values in first set, n_2 represents Total number of values in second set.

IX. ANALYSIS AND INTERPRETATION

Hypothesis

1. There is no significant difference in the pre-test and post-test mean scores of Computer science students of Control group.

In this study, there are 30 students were involved in the control group for the pretest and posttest of the computer science students and the obtained mean scores, standard deviation scores and T test values are listed in the table 1 below.

Table 1: Comparison of Pre-test and Post-test score of students in control group

Control Group	No of Students	Mean	S.D	T-value	Significance
Pre-test	30	16.62	3.80	1.48	Not Significant
Post-test	30	21.82	4.51		

(At 5% level of significance the table value of 't' is 1.96).

From the table 1, it is clear that the calculated t-value (1.48) is less the table value (1). So it is not significant at 0.05 levels. This shows that there is no significant difference between the means of the pre-test and post-test scores of pupils in the control groups. Therefore the two groups do not differ in their performance. The two groups were more or less of the same ability of the pre-test and post –test of control group.

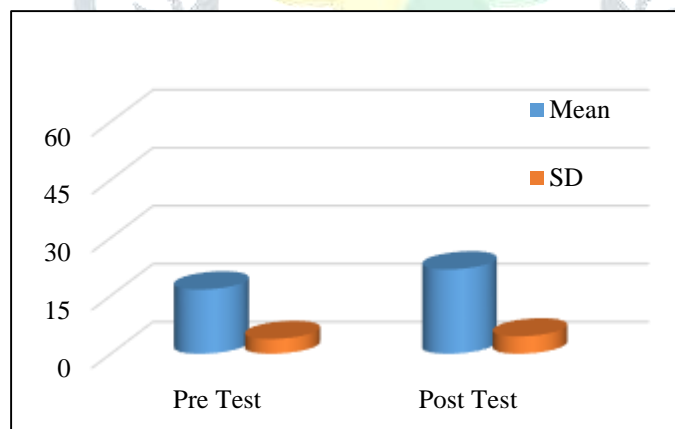


Figure 1: Analysis of Control groups

From the above figure 1, it shows clearly that the mean scores and standard deviation scores of the pre-test and post-test are similar, hence there is no significant difference in the pre-test and post-test mean scores of computer science students of control group.

2. There is no significant difference in the pre-test and post-test mean scores of computer science students of Experimental Group

In this study, there are 30 students were involved in the experimental group for the pre-test and post-test for the computer science students and the obtained mean scores, standard deviation scores and T test values are listed in the table 2 below.

Table 2: Comparison of Pre-test and Post-test score of students in experimental group

Experimental Group	No of Students	Mean	S.D	t-value	Significance
Pre-test	30	16.93	4.82	2.37	Significant
Post-test	30	31.31	3.88		

(At 5% level of significance the table value of 't' is 1.96)

From the table 2, it is clear that the calculated t-value (2.37) is greater than the table value (2). So it is not significant at 0.05 levels. This shows that there is significant difference between the means of the pre-test and post-test scores of pupils in the experimental group. Therefore the two groups differ in their performance. The two groups were of the pre-test and post –test of experimental group have different ability of achievement in computer science.

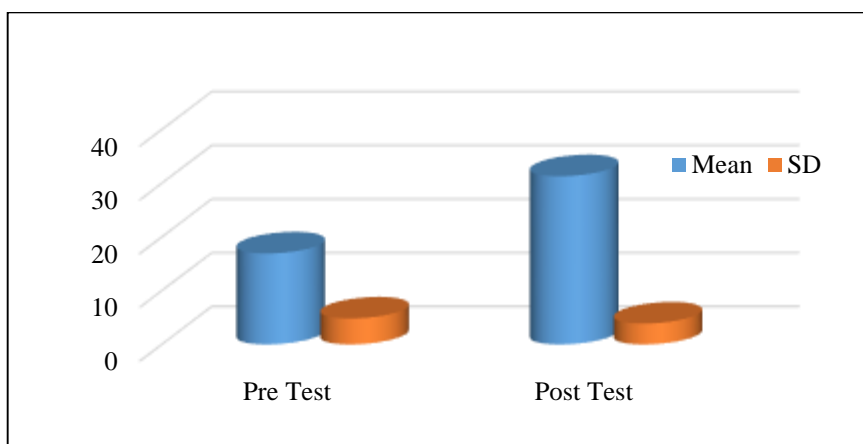


Figure 2: Analysis of Experimental Groups

From the above figure 2, it shows clearly that the mean scores and standard deviation scores of pretest and posttest of experimental group are not similar, hence there is significant difference in the pretest and posttest means scores of computer science students of experimental group.

3. There is no significant difference in the post-test mean scores of computer science students of control group and experimental group.

In this study, there are 30 students were involved in the control group and experimental group for the post-test and the obtained mean scores and standard deviation scores and T test values are listed in the table 3 below.

Table 3: Comparison of Post-test score of students in the control group and experimental group

Group	No of students	Mean	S.D	T-value	Significance
Control Group	30	21.82	4.51	3.26	Significant
Experimental Group	30	31.31	3.88		

(At 5% level of significance the table value of 't' is 1.96)

From the above Table 3, it is clear that the obtained t-value (3.26) is greater than the table value (3). It is significant at 0.05 levels. This indicates that there is significant difference between the experimental group and control group in the achievement. So it can be concluded that the students taught through Multimedia package performed better than those who were taught through present method of teaching.

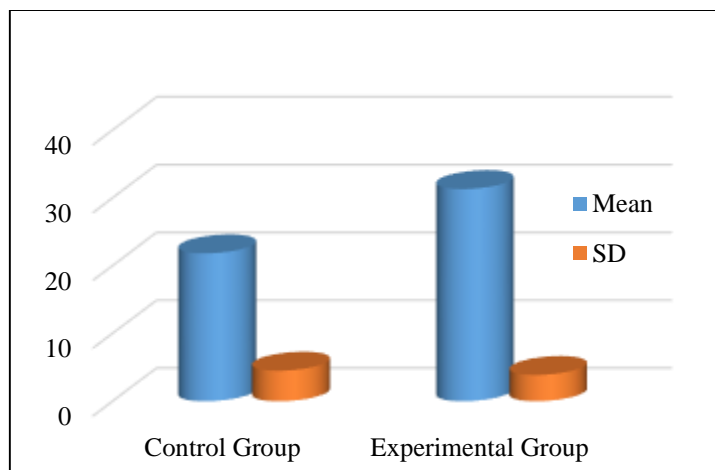


Figure 3: Analysis of post-test scores for control groups and experimental groups

From the above chart, it shows clearly that the mean scores and standard deviation scores of the post-test of control group and experimental group is not similar, hence there is significant difference in the post-test means scores of computer science students of control group and experimental group.

X. CONCLUSION

From the above findings of the present study, it was clearly showed the effectiveness of Multimedia Package for the developing knowledge of computer science. Above findings of the study is clearly show there is no significant difference in the pre and post-test of control group. The researcher teaching the content of computer science chapters through the traditional method that is chalk and board method for post-test of control group students. So the control group students have learning is passive and they no interest to learn the topic and lack of understanding the concept of computer science.

The findings clearly show there is significant difference in the pre and post-test of experimental group. The researcher were teaching the computer science content through the multimedia package of experimental groups students. The multimedia package are combined many media such as audio, video, animation, text and images. Students can learn the content through active learning Process. Multimedia can create the interest and easily understanding the content for the students.

From the above the basics of the results revealed that there is significant difference between the post-test of control group and experimental group. So it can be concluded that the students taught through Multimedia package is performed better than those who were taught through present method of teaching. Multimedia package can be useful in disseminating computer science to encourage active learning and develop cooperation among the students. So the multimedia package effective in raising the academic achievement of computer science. Using the Multimedia to enhance their academic achievement and would help to boost the achievement and to create interest of students for leaning computer science.

SUGGESTIONS

1. To develop theoretical knowledge and practical knowledge of computer science students can be enhanced through multimedia package.
2. The use of multimedia instructional learning enhances achievement, it will decrease wastage and stagnation in the schools,
3. Students should be motivated before they start learning through multimedia.
4. Multimedia package should be provided to schools for teaching science and arts subjects.

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