

Proficiency Of Multimedia Package In Learning Computer Science Among XI Standard Students In Salem District

P. Indira, Dr. K. Dhanalakshmi

Abstract: The present study is Proficiency of Multimedia Package in learning computer science among XI Standard Students in Salem District. In this research, the pre-test and post-test of control and Experimental group are used. In the present study systematic sampling technique was adopted and to select a sample 60 students of standard XI from SriSwamy higher secondary school in Salem district. In that thirty students were considered as Control group and thirty students were considered as Experimental group. In control group, the subject was taught through the conventional method and in experimental group, the subject was exposed through the multimedia package. These two research tools are used for the study such as multimedia package in learning of computer science and Achievement test. It is found that there is a significant means score difference between pre-test and post-test of experimental group among the higher secondary students in learning computer science. It is also to found that Multimedia Package is more effective than conventional methods. In the light of research findings, it has become clear multimedia package supported teaching technique is one of the appropriate and effective methods for teaching computer Science among higher secondary school students. So the multimedia package may lead toward making a difference, which produce in student's long-term memories both the concept of computer science.

Index Terms: Educational Technology, Multimedia Package, Achievement test, Computer science, Traditional method, T-Test, Standard Deviation.

1. INTRODUCTION

Educational technology is a term generally used in the field of Education, but it is frequently used with different meanings. The word technology used by some to mean hardware the devices that deliver in order and serve as tools to accomplish a task but those working in the field use technology to refer a efficient process of solving problems by scientific mean. Hence, educational technology properly refers to a particular approach to achieving the ends of education. Instructional technology refers to the use of such technological processes specifically for teaching and learning. [1] In 21st century is characterized with the emergence of knowledge based society wherein ICT plays a pivotal role. The National curriculum framework 2005 (NCF 2005) has also highlighted the importance of ICT in school education. With this backdrop major paradigm shift is imperative in education characterized by imparting instructions, collaborative learning, multidisciplinary problem-solving and promoting critical thinking skills. Higher Secondary is an important stage of school education because at this stage is focused, discipline based, content oriented course are introduced. Students who reach this stage after 10 years of general education choose subjects that would enable them to pursue their career. "The Computer Science students of today are tomorrow's scientists, engineers, and teachers at the secondary and tertiary levels". [2][4] Multimedia technology has the potential and functionality to hold delight for users compared to that of a standard textbook. Any leaning or teaching should be associated with the feelings of pleasure and enjoyment instead of boredom or fear (Freeman, 1996). [8] Nowadays it is evident that visual materials have been used in every field and technological device, particularly computer have affected students learning.

Multimedia technology helps students to learn the content in a given discipline. It allows the content in a given discipline. It allows for self-pacing and discovery. Students can takes the time the need and choose the path of learning, making learning meaningful and pleasurable. Multimedia easy the work of teachers and will be help in better understanding of concept otherwise taught by traditional methods. Multimedia proves many advantages to the students and teachers, especially through its abilities to adapt to individual differences and to allow the students to control the path of his/her study. [7] 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. [3] Multimedia is an essence of inventions. It combines a large number of known technologies including text, audio, music, photography and video and packages them into something new and wonderful. For example a presentation involving audio and video clips world be considered a "multimedia presentation" V.V. Malagi (2013). [5][6]

Importance of Multimedia in Education

The growth educational technology world present day using the multimedia technologies for learning suggestions new ways in which leaning can take place in schools and the home. To facilitate teachers to have access multimedia in learning resources, which support constructivist concepts and development, allow the teachers more on being facilitator of leaning while effective with individual students. Using Multimedia in teaching and learning process is to be very interest approach for students. The multimedia approach is to be manipulated multi-sensory of learning activities and develop the cooperation among students in the class room. Students are able to concept easily understanding and also developing the knowledge of particular field in life.

- P. Indira, Phd Research Scholar, Department of Education, Periyar University, Salem, India. Email: indirashok@gmail.com., 9688264430
- Dr. K.Dhanalakshmi, Professor, Department of Education, Periyar University, Salem, India. Email: dhanalakshmi75@gmail.com

2. REVIEW LITERATURE

Rotbain, et al., (2011). A study revealed that a computer animation teach high school molecular biology. The achievements of the experimental group we compares with those of a control group/. Analysis of the post-test showed that the mean score of the experimental group was significantly higher than the mean score of the control group.

Ranjit kaur et al., (2015). The study investigated the Effectiveness of Multimedia Approach on the academic achievement of class 8th students in English. The results of the study is the academic achievement scores of boys students taught English through multimedia is better than the boys students taught English through conventional method. The academic achievement scores of rural students taught English through multimedia is better than the rural students taught English through conventional method.

Shazli Hasan Khan (2016). The study conducted the Effectiveness of Multimedia program among senior secondary school students: An Empirical Students. The results of the study is also show that teaching through multimedia programme is effective over traditional method as the performance of experimental group senior secondary school students in the post test is significantly higher than the post-test performance of control group senior secondary school students.

Shailendra Kumar Soni, et.al (2016). The study examines effectiveness of multimedia instructional package for teaching secondary school students in terms of their selected cognitive abilities. The results of the study the formulated hypothesis was tested and it was found through the analysis of data percentile techniques was Developed Multimedia Instruct was found to be effective in terms of Achievement of the students on criterion tests. Seventy five percent students achieved more than sixty percent of marks. The finding also supported most of the studies related to Instructional Technology.

Umesh Chandra Kapri (2017). A study examines Impact of Multimedia in teaching of Science. The results of the study is The teaching by multimedia approach of teaching science subject as of experimental group scored better at post-test in achievement test in science in comparison to the students of controlled group who taught by conventional methods of teaching.

Sunita Arya et.al (2018) A study revealed that Multimedia Technology has paved the new avenues for implementation of instructional and educational ideas. The results of t-test analysis of the Pre-test and Post-test Mean Achievement test scores revealed that there was a statistically significant difference between Achievement level of Biology students of Control Group and Experimental Group. The findings of the study suggest that Multimedia Instructional Package could be considered as a better alternative to the Traditional method for teaching Biology.

3. RATIONALE OF THE STUDY

Now a day's our classroom environment of teaching and learning process performed through traditional method only. Teachers are not to give important for sensory method of teaching. In this situation not applicable for the students

learning of computer science concept and the content. They can't understand the programming languages in computer science. Using the multimedia method of teaching is will be an easiest way to remove the difficulties of learning programming language in computer science, so the students clearly understanding the programming language and concept of computer science through the multimedia method. Because higher secondary students are at the stage of reaching higher education, they need technology has greatly improved the educational opportunities for the students. The multimedia environment has promoted a new level of understanding in programming language skill to be imparted or trained in for technical education to engineering studies.

4. STATEMENT OF THE PROBLEM

In conventional classroom environment which plays a crucial factor in motivating the students to learn is missing in many schools. Students face many challenges to engage in learning, the most intimidating of them all is not having a role of contribute in learning process. Students need to be encouraged to express their opinions and to solve problems together. It becomes very difficult to teach lessons. Higher Secondary is an essential stage of school education because at this stage they select higher study and occupation of life of students. The roles of teachers are enriched with the new content that be taught in a limited time. So that monitoring and feedback of individual students is possible. They are using multimedia package in Computer science is to enable students to make their thinking visible. Students can also understand the difficult concepts in computer science and ability with interest and simplicity. The computer programming is a languages should be kept in memory without forget. Learning of programming languages in computer science for the development of programming skill of students as well as the skill to meet and solve problems in academic and employment purpose. The selected statement of the problem **"Proficiency of Multimedia package in learning Computer Science among XI standard students in Salem district"**.

5. OPERATIONAL DEFINITION

5.1 Proficiency: Proficiency refers to the quality of being effective or the quality of being able to bring about and effect. As far as the present study, Proficiency means having an intended or expected effect. In this study Proficiency was studied in terms of the difference in the mean score of the experimental group and mean score of the control group of students

5.2 Multimedia Package: Multimedia means the use of more than two media of communication in a learning packages or instructional procedure. Multimedia comes in different formats. Multimedia package is a combination of multiple media sources e.g. text, graphics, images, sound/audio, animation and video. The invention of moving image, originally movies and later with sound had a greater impact than a variety of other entertainment sources.

6. OBJECTIVES OF THE STUDY

1. To develop the multimedia package for learning computer science subjects.
2. To find out the significant difference between the post test score of rural and urban in Experimental group.

- To find out the significant difference between the post test score of Experimental group and Control group for Rural.
- To find out the significant difference between the post test score of Experimental group and Control group for Urban.

7. HYPOTHESIS

- There is no significant difference between the post test score of Experimental group and Control group.
- There is no significant difference between the post test score of Rural and Urban in Experimental group.
- There is no significant difference between the post test score of Experimental group and Control group for Rural.
- There is no significant difference between the post test score of Experimental group and Control group for Urban.

8. SAMPLE

This study focused on XI standard students from Salem district in Tamil Nadu as a sample for the study and selected the only private school namely sriswamy higher secondary school in Salem district. The total number of students selected from the school for this investigation is 60 students in computer science. The Students can divide into two groups by control group and experimental group having each 30 students. The researcher selected for the systematic sampling method to carry the study.

9. METHODOLOGY

The 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.

9.1. Instrumentation for the study

- Achievement test: objective type test (Pre-test and Post-test) were constructed to assess the entry level behaviour and performance of the total sample.
- In this research developed a Multimedia package for the 11th standard (C++ Programming Language from the Computer science text book for the term II- Government syllabus and an achievement test was constructed and used for the effectiveness testing in this experimentation study.

9.2. Validity and reliability of the instrumentation

The purpose of this tool is given in order to find out the achievement level of the student. This tool used to conduct the pre-test and post-test for computer science students. The tool contains 50 objective type questions of C++ Programming Language are prepared from the chapters in Computer text book prescribed by state board of Tamil Nadu. The validity of the tool is 0.79.

9.3 Statistical techniques used for the study

9.3.1. 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.

9.3.2 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 $\{x_1, x_2, \dots, x_N\}$ 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

9.3.3. 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:

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

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.

10. RESULTS ANALYSIS AND INTERPRETATION

10.1. Hypothesis

1. There is no significant difference between the post test score 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 1 below.

TABLE 1: 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 1, it is clear that the obtained t-value (3.26) is greater than the table value (1.96). 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 conventional method of teaching.

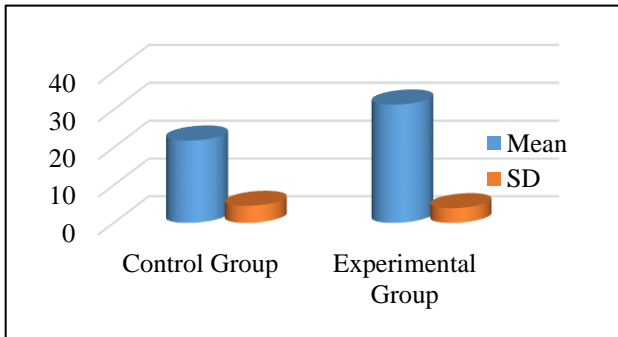


Figure1. Analysis of post-test scores for control groups and experimental groups

From the above figure 1, 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.

2. There is no significant difference between the post test score of Rural and Urban in Experimental Group.

In this study, there are 30 students were involved in the Rural and Urban in Experimental group for the post-test of the computer science students and the obtained mean scores, standard deviation scores and t test values are listed in the table2 below.

TABLE 2: COMPARISON OF POST-TEST SCORE OF RURAL AND URBAN IN EXPERIMENTAL GROUP

Experimental Group	No of Students	Mean	S.D	t-value	Significance
Rural	13	20.11	9.5	2.85	Significant
Urban	17	32.52	4.2		

(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 (2.85) is greater than the table value (1.96). So it is significant at 0.05 levels. This shows that there is significant difference between the means of the Post-test score of Rural and Urban in Experimental group. Therefore the Rural and Urban are differing in learning and understanding of the programming language in computer science. The Urban students are using multimedia to get high achievement of learning better than the rural students. So there is significant difference between the post test score of Rural and Urban in Experimental Group.

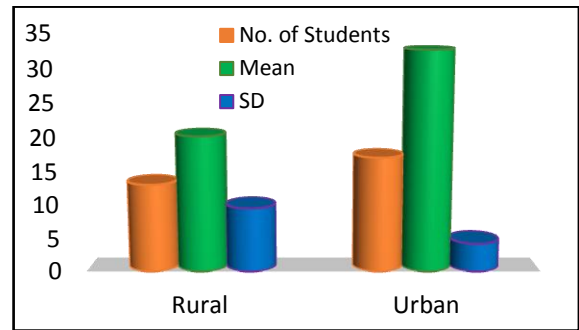


FIGURE 2: ANALYSIS OF POST TEST SCORE OF RURAL AND URBAN IN EXPERIMENTAL GROUP

From the above figure 2, it shows clearly that the mean scores and standard deviation scores of the post-test are not similar, hence there significant difference in the post-test mean scores of rural and urban students in computer science of Experimental group.

3. There is no significant difference between the post-test score of Experimental Group and Control Group for Rural.

In this study, there are 24 students were involved in the post test is experimental group and control group for Rural for learning programming language in computer science students and the obtained mean scores, standard deviation scores and t test values are listed in the table 3 below.

TABLE 3: COMPARISON OF POST-TEST SCORE OF STUDENTS IN EXPERIMENTAL GROUP AND CONTROL GROUP FOR RURAL

Group	No of Students (Rural)	Mean	S.D	t-value	Significance
Experimental	13	20.11	9.5	0.74	Not Significant
Control	11	19.1	4.8		

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

From the table 3, it is clear that the calculated t-value (0.74) is greater than the table value (1.96). So it is not significant at 0.05 levels. This shows that there is no significant difference between the means of the post-test scores of rural in the experimental group and control group. Hence the learning of rural students in the Experimental group and the control group is similar for that the achievement in programming language in computer science. Therefore there is no significant difference between the post-test scores of experimental and control group for rural.

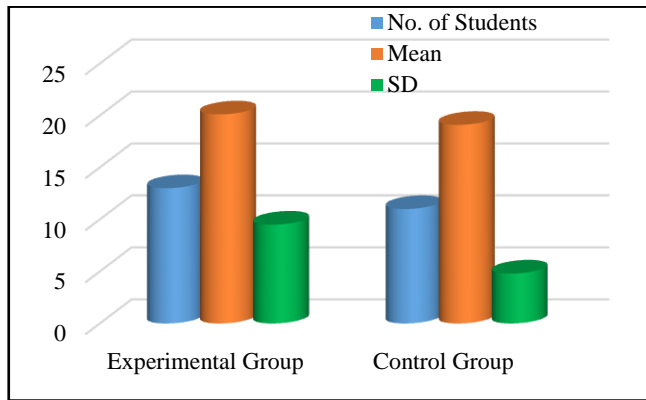


FIGURE 3: ANALYSIS OF POST-TEST OF RURAL IN EXPERIMENTAL GROUPS AND CONTROL GROUP

From the above figure 3, it shows clearly that the mean scores and standard deviation scores of post-test of experimental and control group of rural are similar, hence there is no significant difference between the post-test of control and experimental of rural means scores of computer science students of experimental group and control group.

4. There is no significant difference between the post-test score of Experimental Group and Control Group for Urban

In this study, there are 36 students were involved in the post test is experimental group and control group for urban for learning programming language in computer science students and the obtained mean scores, standard deviation scores and t test values are listed in the given table 4 below.

TABLE 4: COMPARISON OF POST-TEST SCORE OF STUDENTS IN EXPERIMENTAL GROUP AND CONTROL GROUP FOR URBAN

Group	No of Students (Urban)	Mean	S.D	t-value	Significance
Experimental	17	32.5	4.27	8.93	Significant
Control	19	19.1	4.2		

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

From the table 4, it is clear that the calculated t-value (8.93) is greater than the table value (1.96). So it is significant at 0.05 levels. This shows that there is significant difference between the means of the post-test scores of urban in the experimental group and control group. The urban students in the control group are learning through the present method using blackboard and chalk. But the urban students of experimental group are using interactive method of Multimedia package. So, the experimental group of urban students are learning better than the urban students of Control group. Hence, there is significant difference between the post-test scores of experimental group and control group for urban.

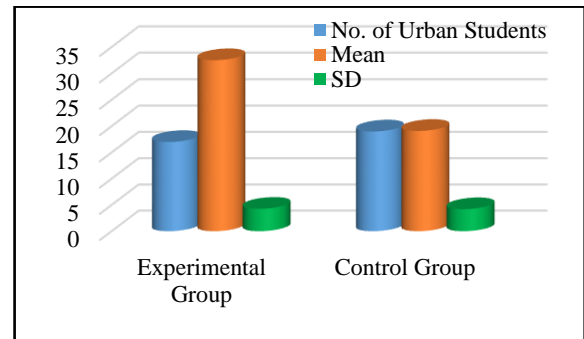


FIGURE 4: ANALYSIS OF POST-TEST OF URBAN IN EXPERIMENTAL GROUPS AND CONTROL GROUP

From the above figure 4, it shows clearly that the mean scores and standard deviation scores of post-test of experimental and control group of urban is not similar, hence there is significant difference between the post-test of control and experimental of urban.

11. FINDINGS OF THE STUDY

1. A significant difference was found on Post-test Mean Achievement scores of Computer Science students of Control Group and Experimental Group elucidating that experimental treatment yielded significant difference in the Post-test Mean Achievement scores of computer science students. From the above given finding we can infer that computer science students of Experimental Group who were taught through Multimedia Package exhibited better achievement in computer science as compared Control Group who were taught through Traditional Method.
2. A significant difference was found in the Rural and Urban of post-test Mean Achievement scores of computer science students in programming language of experimental Group at after the experimental treatment. From the above given finding we can infer that Multimedia Package was found effective with respect to Academic Achievement in Rural and Urban.
3. There is no significant difference found in the post-test of control and experimental group for rural group students. The post-test of control group rural students. So the two groups of students is more over the same achievement of learning computer science in higher secondary level.
4. A Significant difference found in the post-test of control and experimental group for urban students. The post-test of control group urban students using the traditional method of teaching, so the researcher taught the content of programming language using blackboard and chalk through the lecture. But the post-test of computer science urban students using the content through the multimedia package is effective and get high level academic achievement than the control group urban students.

12. CONCLUSION

From the above findings of the study, we conclude that the computer science students of experimental group who were taught through the multimedia package better achievement in computer science as compared control group who were through the traditional method of teaching. The post-test of experimental urban student's better learning achievement than the experimental group of rural students. So the multimedia package use for students to increase academic achievement

and active participation in classroom learning. Efforts are to be taken by the educational institutional to provide Multimedia facilities. Teachers are being potentially trained to make best use of the Multimedia in order to promote active learning. It is high time that Multimedia Technology be included in the teacher education curriculum. This will enable to meet the needs of the future challenges for students.

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CONTRIBUTORS



Mrs. P. Indira received her MSc (Computer Science) and M.Ed from Periyar University, Salem, India and Tamilnadu Teachers Education university in 2008 and 2012 respectively. Currently she is pursuing PhD (Education) from Periyar University. Her research area of interests includes: Educational Technology, Computer Education, technology in education. The current study, she has contributed in the designing of the multimedia tool for educational technology,

Educational Psychology, Women's Education. The coding and the implementation of the ideas were also carried out by her.



Dr K. Dhanalakshmi received her Ph.D in Education subject. Currently she is working as a Professor, Department of Education, Periyar University. She presented and published over 30 papers in National, International conferences and Journals. Her area of interest includes: Cognitive Psychology, Educational Technology, Inclusive Education, Educational Psychology, Value Education, Educational Management, Women's Education and Special Education. The experimental results were analysed, interpreted and evaluated by her.