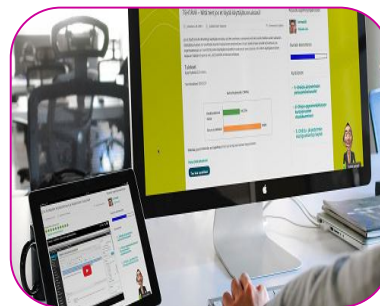




## ROLE OF COMPUTER SUPPORTED LEARNING MATERIALS IN EDUCATION AT SECONDARY SCHOOL STUDENTS

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### ABSTRACT:

*In this world of technology it is the ability of a teacher to utilize the technology effectively in education so as to improve the better achievement of students. In this study the researcher attempted to find out the role of computer supported learning materials multimedia package in Chemistry for enhancing the achievement. The main objectives of the study were (i) to test the effectiveness of a developed teacher assisted multimedia package in Chemistry among ninth standard students (ii) to test effectiveness of the multimedia package in Chemistry based on subsample medium of instruction. The method adopted was experimental, a pre-test, post-test and a delayed post-test were included. The total sample consists of 160 students; the tools used were (i) multimedia package for experimental group (ii) achievement test on the selected topics developed by the investigator and a general data sheet (for subsample). The major findings of the study were (i) the multimedia package was very effective in both post-test and delayed post test when compared to the control group (ii) there exist significant difference in the post test and delayed post-test achievement score based on medium of instruction as subsample. Thus in conclusion a multimedia package can effectively enhance the academic achievement of the students at secondary level.*

**KEYWORDS :** technology , multimedia package , learning materials.

### INTRODUCTION

"In a few years multimedia computers will be an anachronism because all computers will readily deal with images, sounds and motions, video, seamlessly and smoothly integrated into what a computer is", says Tag Vaughan. People have had a love affair with computers for two decades. The invention of moving images and seeing the visuals had a great impact than any other Medias. As the clinche goes "a picture is worth thousand words, full motion video embedded in documents is worth ever more. Multimedia is the integration of multiple forms of media. This includes text, graphics, audio, video, etc. For example, a presentation involving audio and video clips would be considered a "multimedia presentation." Educational software that involves animations, sound, and text is called "multimedia software." Due to the advancements in computer speeds and storage space, multimedia is commonplace today. Multimedia-based learning is becoming increasingly common. While it has limitations, and certainly should not be seen as a substitute for face-to-face interaction, it does have numerous advantages for teacher professional development. Multimedia professional development experiences can be interactive and take place at any time and at any place. Also the information contained on the Internet sources is unlimited, up to date, inexpensive, and searchable. Here the investigator tries to incorporate multimedia approach in learning chemistry at secondary level.

### NEED AND SIGNIFICANCE OF THE STUDY

In the technological world it is very difficult to handle the mindset of the new generation students. The importance of multimedia arises from this context. It is very useful to engage the students with their own capacities. Thus multimedia packages can be systematically used to learn their study matters. The significance of the multimedia packages is described as follows:

- ❖ Provide students with opportunities to represent and express their prior knowledge.
- ❖ Allow students to function as designers, using tools for analyzing the world, accessing and interpreting information, organizing their personal knowledge, and representing what they know to others."
- ❖ Engage students and provide valuable learning opportunities.
- ❖ Empower students to create and design rather than "absorbing representations created by others."
- ❖ Create personally meaningful learning opportunities.
- ❖ Students that experience the technical steps needed to produce effective multimedia documents become better consumers of multimedia documents produced by others.
- ❖ Students indicate they learn the material included in their presentation at a much greater depth than in traditional writing projects.

There is another aspect to developing multimedia packages that empowers students. Students quickly recognize that their electronic documents can be easily shared. Because of this, students place a greater value on producing a product that is of high standard. According to Laurillard (1993) "it is important in designing multiple-media distance education courses to understand how the various media should be integrated so that they complement each other, allowing students to relate them meaningfully into in a richly textured learning experience".

### OBJECTIVES OF THE STUDY

- To test the effectiveness of the multimedia package by comparing the achievement in Chemistry of the treatment groups, that is activity oriented method as control group and multimedia package as experimental group.
- To test the effectiveness of the multimedia package by comparing the achievement in Chemistry of the treatment groups, that is activity oriented method as control group and multimedia package as experimental group based on the subsample medium of instruction.

### HYPOTHESES

When the treatment groups (activity oriented method and multimedia package group) exposed to the experimental study (based on total sample) there will be significant difference between Activity Oriented Method group and Multimedia Package group with regard to immediate post-test.

When the treatment groups (activity oriented method and multimedia package group) exposed to the experimental study (based on sub sample) there will be significant difference between Activity oriented Method group and Multimedia Package group with regard to delayed post-test.

### RESEARCH DESIGN

In the present study the pre-test experimental treatment and post-test design was employed. It involved two groups of students. One experimental group was taught Chemistry through the multimedia package and the control group was taught through the conventional method. The design comprised of three stages. The first stage involved the pre-testing of all the students of the control group and experimental group on their academic achievement. The second stage involved treatment of the multimedia package to the experimental group for ten weeks. This consisted of teaching of five learning points of Chemistry included in the multimedia package. Similarly the control group was treated with the conventional method. In the third stage, the students were post-tested with an achievement test. In the fourth stage a delayed post-test also conducted.

Sample selected were ninth standard students from various schools. After equating the groups they were divided into activity oriented group (as control group) and multimedia package group (as experimental group) having 80 students each. Tools used were multimedia package group, an achievement test and a general data sheet for specifying the medium of instruction. Statistical techniques used were mean and standard deviation for pre-test, post-test and delayed post-test scores and t-test was applied for testing the significance of the difference between control and experimental groups.

**Data Analysis**

**Comparison of Pre-Test Scores of Activity Oriented Method Group (Control) and Multimedia Package Group (Experimental):**

**Table 1: Results of Test of Significance of the Pre-test Achievement Scores of AMG and MPG**

Group	N	Mean	SD	t-value
AMG	80	14.5875	2.22582	0.15
MPG	80	14.5375	1.91558	

Table-1 shows that the t-value is 0.15 which is not significant. This shows that there is no significant difference between the means of the pre test scores of the students in the AMG and MPG. This result shows that the two groups do not differ significantly with respect to the achievement in Chemistry. Thus the hypothesis ‘there is no significant difference between the treatment groups [Multimedia Package Group (MPG), and Activity Method Group (AMG)] in their pre-test achievement scores’ is **accepted**.

**Comparison of Post-Test Scores of Activity Method Group (Control) and Multimedia Package Group (Experimental):**

**Table 2: Results of Test of Significance of the Post-Test Achievement Scores of AMG and MPG**

Group	N	Mean	SD	t-value
AMG	80	17.2625	1.68946	10.30**
MPG	80	20.0500	1.73497	

*\*\*Significance at 0.01 level.*

Table-2 shows that the t-value obtained is 10.30 which is significant at 0.01 level, indicating that there is significant difference between the means of the post test scores of the IS students in the AMG and MPG. This means that two groups differ significantly in the post test achievement in Chemistry. Since the mean score of MPG is higher than that of AMG, the MPG is considered superior to the control group. Thus the hypothesis ‘there is no significant difference between the treatment groups [Multimedia Package Group (MPG), and Activity Method Group (AMG)] in their post-test achievement scores’ is **not accepted**.

**Comparison of delayed Post-Test Scores of Activity Method Group (Control) and Multimedia Package Group (Experimental):**

**Table 3: Results of Test of Significance of the Delayed Post-Test Achievement Scores of AMG and MPG**

Group	N	Mean	SD	t-value
AMG	80	15.5000	1.64586	11.78**
MPG	80	18.6500	1.73643	

*\*\*Significance at 0.01 level.*

Table-3 shows that the t-value obtained is 11.78 which is significant at 0.01 level, indicating that there is significant difference between the means of the retention test scores of the students in the AMG and MPG. This means that two groups differ significantly in the delayed post test achievement scores in Chemistry. Since the mean score of MPG is higher than that of AMG, the MPG is considered superior to the control group. Thus the hypothesis 'there is no significant difference between the treatment groups [Multimedia Package Group (MPG), and Activity Method Group (AMG)] in their delayed post-test test achievement scores' is **not accepted**.

#### Comparison of Pre-Test, Post Test and delayed Post-Test Achievement Scores of Students Based on Subsample-Medium of Instruction:

**Table 4: Results of Test of Significance of the Difference between Mean Pre-test, Post-test and Delayed Post-test Achievement Scores of Malayalam and English Medium Intellectually Superior Students in TAMG**

	Medium	N	Mean	SD	t-value
Pre-Test	Malayalam	44	14.82	1.79	1.44
	English	36	14.19	2.03	
Post-Test	Malayalam	44	19.73	1.88	1.92
	English	36	20.44	1.46	
Delayed Post-Test	Malayalam	44	18.32	1.79	1.94
	English	36	19.06	1.60	

From Table-4, it is clear that the t-value obtained for pre-test scores is 1.44 which is not significant even at 0.05 level. This shows that there is no significant difference between English medium and Malayalam medium Intellectually Superior students in the TAMG in their pre-test achievement scores. Thus the sub-hypothesis formulated in this context 'there is significant difference between Malayalam and English Medium students in TAMG in their pre-test achievement scores in Chemistry' is **not accepted**.

The t-value obtained for post-test score is 1.92 and is not significant even at 0.05 level. This means that there is no significant difference in the post-test achievement scores of Malayalam and English medium Intellectually Superior students in TAMG. Thus, it can be concluded that the post-achievement of intellectually superior students in TAMP group is not influenced by the medium of instruction. Thus the sub-hypothesis formulated in this context 'there is significant difference between Malayalam and English Medium Intellectually Superior students in TAMG in their post-test achievement in Chemistry' is **not accepted**.

The t-value obtained for delayed post-test scores is 1.94 and is not significant even at 0.05 level. This shows that there is no significant difference in the delayed post-test achievement of Intellectually Superior Malayalam medium and English medium students in the TAMG. Thus it can be concluded that the delayed post-test achievement of Intellectually Superior students in TAMG is not influenced by the medium of instruction. Thus the sub-hypothesis formulated in this context 'there is significant difference between Malayalam and English Medium Intellectually Superior students in TAMG in their delayed post-test achievement in Chemistry' is **not accepted**.

The above analysis reveals irrespective of the medium of instruction, the teacher-assisted multimedia package is effective in enhancing the post-test and delayed post-test achievement in Chemistry of intellectually superior students at secondary level.

#### FINDINGS

- The students belong to MPG taught Chemistry had scored significantly higher on the post-test achievement than that of the AMG. (CR = 10.30;  $p < 0.01$ )

- The students belong to MPG taught Chemistry had scored significantly higher on the delayed post-test achievement than that of the AMG. (CR = 11.78;  $p < 0.01$ )
- There is no significant difference between students belonging to Malayalam and English medium in the Teacher-Assisted Multimedia package Group in their pre-test scores (CR = 1.44;  $p < 0.05$ ).
- There is no significant difference between students belonging to Malayalam and English medium in the Teacher-Assisted Multimedia package Group in their post-test scores (CR = 1.92;  $p < 0.05$ ).
- There is no significant difference between students belonging to Malayalam medium and English medium in the Teacher-Assisted Multimedia package Group in their delayed post-test scores. (CR = 1.94;  $p < 0.05$ ).

## CONCLUSION

The present study indicates that the multimedia package is very effective than that of the traditional way of teaching. The post-test mean achievement scores of the experimental group showed higher value. This implies that the students who were taught Chemistry through multimedia package had shown significant improvement in their achievement. This suggests that multimedia package contributed better achievement in the present scenario, therefore this type of multimedia packages should be included in our curriculum. Similarly the multimedia package is very effective for male students than that of the female students in their achievement in Chemistry in both post-test and delayed post-test.

## EDUCATIONAL IMPLICATIONS

The richness and greatness of a nation depends primarily on its rich resources. They are the determining factors of a nation's destiny and pride. Human resources are enriched and vitalized through the channel of ever evolving and ever fresh force called education. Since the present generation needs practical type of education, there is a need for multimedia learning methods. The findings of the study are very much relevant in the current context and can be used as a catalyst for the world of Chemistry education. For the educational reformers and curriculum designers, these findings can be introduced while framing the curriculum.

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