



Construction and try out of multimedia package on achievement in Chemistry subject of students of standard XII

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Abstract:

Multimedia is continuous developing technology in every field. It is highly using for entertainment purposes. Now all these technologies are implemented in education field. In past, many times it was proved that multimedia is highly effective on educational achievement of secondary schools' students. Still expansion of new dimensions it's necessary to prove this method time to time. In present study the researcher has once again try prove the effectiveness of multimedia package on achievement in Chemistry subject of students of standard 12.

We are now in the age of visual information where visual content plays a role in every part of life. As 65 percent of the population is visual learners, images are clearly key to engaging people in eLearning courses. Moving and still images have been included in learning materials for decades, but only now has faster broadband, cellular networks, and high-resolution screens made it possible for high-quality images to be a part of eLearning visual design. Graphic interfaces made up of photos, illustrations, charts, maps, diagrams, and videos are gradually replacing text-based courses. In present study the researcher has used well-developed multimedia software in chemistry subject to study its effect on achievement of students of standard XII.

1. Introduction to multimedia package

The researcher has used multimedia software constructed by **Concept Virtual Learning Private Limited**. In this software there were different sub applications for teaching learning processes. There was animated multimedia content in Chemistry subject for the students of standard XII. The software has question bank for practices, self-evaluation tests and self-developed progress report card. The researcher has chosen two different chapters: 1) Solid State and 2) Halo Arena and Halo Alkenes.

2. Objectives

Objectives of the present study are as follows:

1. To construct multimedia package in selected units of Chemistry subject for the students of standard 12.
2. To study the effect of multimedia package on achievement of students of Grade XII in Chemistry subject.
3. To study the effect of multimedia package on achievement of students of Grade XII in Chemistry subject in context of their group.
4. To study the effect of multimedia package on achievement of students of Grade XII in Chemistry subject in context of their gender.

3. Hypotheses

Hypotheses of present research are as follows:

- H₀₁** There is no significant difference between mean scores of post-test of students of experimental group and controlled group.

- H₀₂** There is no significant difference between mean scores of post-test of boys of experimental group and controlled group.
- H₀₃** There is no significant difference between mean scores of post-test of girls of experimental group and controlled group.
- H₀₄** There is no significant difference between mean scores of post-test of boys and girls of experimental group.

4. Limitations of the study

1. The present study was conducted in Fellowship Higher Secondary School, Hirawadi, Thakkarnagar, Ahmadabad.
2. The students of standard XII from science stream were involved in this study.

5. Significance of the study

The researcher has developed multimedia package in two units of Chemistry subject of standard 12. The researcher took help of Concept Virtual Learning Private Limited to develop his software. The researcher has given ideas about multimedia package for chemistry. He is expert in Chemistry subject but has not enough coding knowledge to develop a desktop-based application. Therefore, he took help of experts of Concept Virtual Learning Private Limited to embed his multimedia production in chemistry subject. This experiment will inspire teachers to develop their own learning packages with the help of computer experts. This study will also check the effect of such teaching-learning packages on achievement of students of higher secondary schools in science subjects.

6. Development of multimedia package

The researcher has chosen two different chapters in Chemistry subject from standard 12 to develop a multimedia package. These chapters are as follows.

1. Solid State
2. Halo Arene and Halo Alkane

The researcher has provided his ideas to the expert and with the help of them a whole desktop based application was developed. In present software the following task have been embedded.

6.1 Animations

There were animations regarding learning content from chosen chapters in this application. There are different teaching contents with high quality animations.

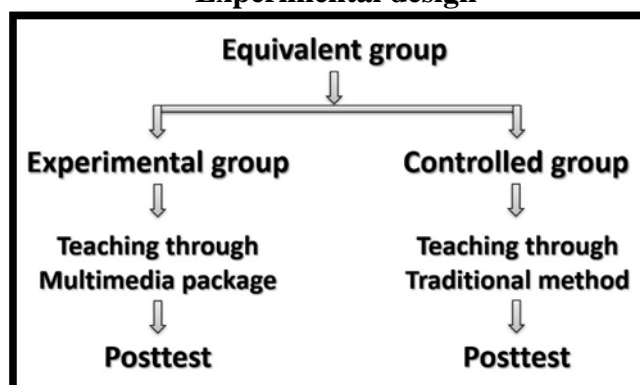
6.2 Tests

There is embedded question bank in application. Students can either practice or give tests for self evaluation. Results popup within no moment after test is submitted. The students can save results and track their progress.

6.3 Analysis

There is an analysis section in which all learning and test analysis are recorded. The learner can check how much time he watched the animation, how many tests have been given, etc.

Experimental design



8. Sample of the study

To conduct the present research the researcher has chosen Fellowship Higher Secondary School, Thakkarnagar, Ahmedabad. There were 80 students selected from this school. Therefore, 80 students from Fellowship Higher Secondary School were sample of present study. Out of this sample 40 students in experimental group and 40 students in controlled group had been distributed. In each group, there were 22 boy and 18 girls.

9. Research tool

The researcher has constructed achievement test in Chemistry subject for two chapters worth 50 marks.

10. Data collection

The researcher has conducted an experimental method on two different groups of students of standard 12. Experimental group was treated with multimedia package and controlled group was treated with traditional teaching method. After experimentation both groups were given a test of 50 marks. They were given 90 minutes to complete this test. Before giving test, the students were given proper instructions to the students. Once the test was completed, the answer sheets were collected and checked for further analysis.

11. Data analysis and interpretation

Data analysis was the most important task for this study. An improper statistical method may spoil the finding of the study. The researcher has made some assumptions in the form of hypotheses. These hypotheses were tested using t-test. The results obtained from t-test analysis are mentioned below.

H₀₁ There is no significant difference between mean scores of achievement test of students of experimental group and controlled group.

Table 1 Mean, SD, SED and critical ratio of students of experimental group and controlled group

Students	N	Mean	SD	SED	t	Remark
Experimental	40	42.58	4.79	1.02	6.54	**
Controlled	40	35.93	4.30			

Table t-value		
df	0.05	0.01
78	1.99	2.64

According to above table, mean of students of experimental group and controlled group are 42.58 and 35.93 respectively. Standard deviations are 4.79 and 4.30 respectively. Calculated t-value is 6.54. For, df=78, table t-value is 1.99 at 0.05 level and 2.64 at 0.01 level. Thus, calculated t-value is more than table t-value at both the levels. Therefore, hypothesis is rejected at both the levels and there is a significant difference between mean scores of students of experimental group and controlled group. Moreover, mean score of students of experimental group is more than mean score of students of controlled group. This indicates that achievement of students of experimental group is more than achievement of students of controlled group. Which shows positive effect of multimedia package on achievement of students in Chemistry subject? Therefore, we can say that teaching through multimedia package is more effective than teaching through traditional chalk and talk method.

H₀₂ There is no significant difference between mean scores of achievement test of boys of experimental group and controlled group.

Table 2: Mean, SD, SED and critical ratio of boys of experimental group and controlled group

Boys	N	Mean	SD	SED	t	Remark
Experimental	22	42.73	5.33	1.46	4.84	**
Controlled	22	35.68	4.27			

Table t-value		
df	0.05	0.01
42	2.02	2.70

According to above table, mean of boys of experimental group and controlled group are 41.73 and 35.68 respectively. Standard deviations are 5.33 and 4.27 respectively. Calculated t-value is 4.84. For, df=42, table t-value is 2.02 at 0.05 level and 2.70 at 0.01 level. Thus, calculated t-value is more than table t-value at both the levels. Therefore, hypothesis is rejected at both the levels and there is a significant difference between mean scores of boys of experimental group and controlled group. Moreover, mean score of boys of experimental group is more than mean score of boys of controlled group. This indicates that achievement of boys of experimental group is more than achievement of boys of controlled group. This shows positive effect of multimedia package on achievement of boys in Chemistry subject. Therefore, we can say that teaching through multimedia package is more effective than teaching through traditional chalk and talk method.

H₀₃ There is no significant difference between mean scores of achievement test of girls of experimental group and controlled group.

Table 3: Mean, SD, SED and critical ratio of girls of experimental group and controlled group

Girls	N	Mean	SD	SED	t	Remark
Experimental	18	42.39	4.17	1.44	4.29	**
Controlled	18	36.22	4.44			

Table t-value		
df	0.05	0.01
34	2.03	2.73

According to above table, mean of girls of experimental group and controlled group are 42.39 and 36.22 respectively. Standard deviations are 4.17 and 4.44 respectively. Calculated t-value is 4.29. For, df=34, table t-value is 2.03 at 0.05 level and 2.73 at 0.01 level. Thus, calculated t-value is more than table t-value at both the levels. Therefore, hypothesis is rejected at both the levels and there is a significant difference between mean scores of girls of experimental group and controlled group. Moreover, mean score of girls of experimental group is more than mean score of girls of controlled group. This indicates that achievement of girls of experimental group is more than achievement of girls of controlled group. This shows positive effect of multimedia package on achievement of girls in Chemistry subject. Therefore, we can say that teaching through multimedia package is more effective than teaching through traditional chalk and talk method.

H₀₄ There is no significant difference between mean scores of achievement test of boys and girls of experimental group.

**Table 4
 Mean, SD, SED and critical ratio of boys and girls of experimental group**

Experimental	N	Mean	SD	SED	t	Remark
Boys	22	42.73	5.33	1.50	0.23	NS
Girls	18	42.39	4.17			

Table t-value		
df	0.05	0.01
38	2.02	2.71

According to above table, mean of boys and girls of experimental group are 42.73 and 42.39 respectively. Standard deviations are 5.33 and 4.17 respectively. Calculated t-value is 0.23. For, df=38, table t-value is 2.02 at 0.05 level and 2.71 at 0.01 level. Thus, calculated t-value is less than table t-

value at both the levels. Therefore, hypothesis is not rejected at both the levels and there is no significant difference between mean scores of boys and girls of experimental group. Therefore, it is said that effect of multimedia package on boys and girls are equal.

12. Findings

- The results indicate that achievement of students of experimental group is more than achievement of students of controlled group of Fellowship Higher Secondary School. Which shows positive effect of multimedia package on achievement of students in Chemistry subject? Therefore, we can say that teaching through multimedia package is more effective than teaching through traditional chalk and talk method.
- It is revealed that the achievement of boys of experimental group is more than achievement of boys of controlled group Fellowship Higher Secondary School. This shows positive effect of multimedia package on achievement of boys in Chemistry subject. Therefore, we can say that teaching through multimedia package is more effective than teaching through traditional chalk and talk method.
- The achievement of girls of experimental group is more than achievement of girls of controlled group Fellowship Higher Secondary School. This shows positive effect of multimedia package on achievement of girls in Chemistry subject. Therefore, we can say that teaching through multimedia package is more effective than teaching through traditional chalk and talk method.
- There is no significant difference found between mean scores of boys and girls of experimental group Fellowship Higher Secondary School. Therefore, it is said that effect of multimedia package on boys and girls are equal.

13. Conclusion

It was a tough and time taking study to develop multimedia package and try out it on achievement in Chemistry subject of students of standard 12. The researcher has poured all his efforts to create a high-quality multimedia package. The result was in the favor of experimental method shows effectiveness of multimedia package.

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