

EFFECTIVENESS OF SELF-LEARNING MULTIMEDIA PACKAGE FOR ENHANCING ACHIEVEMENT OF INTELLECTUALLY SUPERIOR STUDENTS

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ABSTRACT

In this study the researcher attempted to find out the effectiveness of a self learning multimedia package in Chemistry for enhancing the achievement of intellectually superior students. The main objectives of the study were (i) (to test the effectiveness of a developed self-learning multimedia package in Chemistry among ninth standard intellectually superior students. 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) Self-learning Multimedia package for experimental group (ii) achievement test on the selected topics developed by the investigator and socio-economic status scale (for sub sample). 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 gender as sub-sample.

KEYWORDS: *Self-Learning Multimedia Package, Experimental Group, Socio-Economic Status.*

Introduction

Normal classroom teaching-learning in heterogeneous classrooms is meant for average students. Usually the below average students like slow learners and backward children are getting due consideration, but the intellectually superior students are ignored to a great extent. The needs and problems of intellectually superior students are always out of attention of teachers as well as authorities. The main needs of them are enhancement of their creativity and ingenuity, development of his/her extraordinary talents, upholding of self-expression and self-actualization which are being ignored in classroom. Nowadays, innovative strategies and techniques especially technology-mediated techniques are adopted in classroom learning. According to Laurillard (1993), appropriate utilization of the above-mentioned techniques will provide opportunity for extrapolated learning which is very much beneficial to intellectually superior students who intends to continue their study in Chemistry. Since Chemistry consists of large number of abstracts, facts and concepts, multimedia package will make the learning of Chemistry more concrete, meaningful and effective. By boosting their talent, they can be made highly creative and useful citizens. Thus, the present study aimed at developing a self-learning multimedia package in Chemistry for intellectually superior students.

Objectives of the Study

- To test the effectiveness of self-learning multimedia package by comparing the achievement in Chemistry of the treatment groups, that is activity-oriented method (AOM) as control group and self-learning multimedia package (SLAM) as experimental group.

Hypothesis

- There exists significant difference between Activity Oriented Method group and Self-learning Multimedia Package group with regard to immediate post-test and delayed post-test.

Methodology

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 self-learning multimedia package and the control group was taught through the conventional method. The design

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comprised of four 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 self-learning 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 intellectually superior students from various schools. After equating the groups they were divided into activity oriented group (as control group) and teacher assisted multimedia package group (as experimental group) having 80 students each. Tools used were self-learning multimedia package (SLM), 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.

Analysis and Interpretation

The pre-test and delayed post-test scores obtained through achievement test given to intellectually superior students belonging to the treatment groups were subjected to ANCOVA to determine the effectiveness of the self learning multimedia package over Activity Oriented Method for enhancing delayed post-test achievement in Chemistry for Intellectually Superior students at secondary level.

The sum of squares, mean square variances and F-ratios for the pre-test and post-test scores of the treatment groups were computed and Table 1 presents the details of the analysis.

Table 1: Summary of ANOVA of Pre-test and Delayed Post-test Scores of Intellectually Superior Students in the Treatment Groups

Source of Variation	df	SSx	SSy	MSx(Vx)	MSy(Vx)
Among Means	2	11	410.233	5.5	205.1167
Within Groups	237	981	565.75	4.1	2.39
Total	239	992.16	975.983		

$F_x = 1.32$,

$F_y = 85.93$

From table F for df 2/237

F at 0.05 level = 3.04

F at 0.01 level = 4.71

The F-ratios for the two sets of scores were tested for significance. Since the table value of F for df 2/237 is 3.04 at 0.05 level and 4.71 at 0.01 level, the obtained F_x value ($F_x = 1.32$) is not significant. The obtained F_x value shows that the random assignment of the subjects to the three groups was quite successful. The F_y obtained ($F_y = 85.93$) is significant at 0.01 level, because the table value of F for df 2/237 is 3.04 at 0.05 level and 4.71 at 0.01 level. The analysis of variance of the y-means indicates that there exists significant difference between the treatment groups in their delayed post-test achievement.

For correcting the final y-scores for the difference in the pre-test scores, the adjusted sum of squares and adjusted mean square variances for delayed post-test scores were computed and F-ratio was calculated and given in Table 2.

Table 2: ANCOVA of Pre-test and Delayed Post-test Scores of Intellectually Superior Students in the Treatment Groups

Source of Variation	df	SSx	SSy	Sxy	SSyx	MSyx (Vyx)	SDyx
Among Means	2	11	410.233	5.7	407	204	1.25
Within Groups	236	981	566	4422.4	366	2	
Total	238	992.16	975.983	448.075	774		

$F_{y.x} = 131.20$

From the table F, for df 2/236

F at 0.05 level = 3.04,

F at 0.01 level = 4.71

Since the obtained F-ratio ($F_{y.x} = 131.20$; $p < 0.01$) is higher than Table value at 0.01 level, it is significant at 0.01 level. This F-ratio for the adjusted delayed post-test scores shows that the three final mean scores of the experimental and control groups differ significantly after they have been adjusted for differences in the pre test scores.

The adjusted means for the delayed post-test scores of students in the treatment groups were compared using correlation and regression and given in Table 3.

Table 3: Adjusted Means for the Delayed Post-test Scores of Intellectually Superior Students in the Treatment Groups

Groups	N	Mx	My	My.x(adjusted)
AOMG	80	14.59	15.50	15.42
TAMG	80	14.54	18.65	18.59
SLMG	80	14.11	16.58	16.71
General Means		14.41	16.91	16.91

t- between control and teacher-assisted = 15.73

t- between control and self-learning = 6.39

t- between teacher-assisted and self-learning = 9.34

from the Table D, for df 236

t at 0.05 level= 3.04

t at 0.01 level=4.71

The comparison of the adjusted means of the delayed post-test scores of students in the treatment groups showed that there is significant difference between the control group and Teacher Assisted Multimedia package Group in their adjusted delayed post-test means ($t = 15.73$; $p < 0.01$). Similarly, significant difference was observed between Activity Oriented Method Group and Teacher Assisted Multimedia package Group ($t = 6.39$; $p < 0.01$) in their delayed post-test scores. The comparison of the adjusted delayed post-test mean scores of Teacher Assisted Multimedia package Group and self-learning group also showed significant difference ($t = 9.34$; $p < 0.01$). The adjusted delayed post-test mean scores obtained showed that the Teacher Assisted Multimedia package Group is superior (adjusted mean = 18.59) compared to Self Learning Multimedia package Group (adjusted mean = 16.71) and Activity Oriented Method Group (adjusted mean = 15.42). This clearly indicates that Teacher Assisted Multimedia package is the best method in enhancing the delayed post-test achievement in Chemistry of intellectually superior students compared to self-learning multimedia package and Activity Oriented Method. It was also revealed that self-learning multimedia package is more effective in enhancing the delayed post-test achievement in Chemistry of intellectually superior students compared to Activity Oriented Method. This clearly indicates that the multimedia package prepared by the investigator is more effective in enhancing even the delayed post-test achievement in Chemistry of intellectually superior students compared to the Activity Oriented Method. The results are also in conformity with the previous findings that teacher-assisted multimedia package is more effective than self-learning multimedia package in enhancing the delayed post-test achievement of intellectually superior secondary level students (previous findings indicated that teacher-assisted multimedia package is more effective than self-learning using the multimedia package in enhancing the post-test achievement of intellectually superior students). Thus, the hypothesis formulated in this context (Hypothesis) *'The Teacher Assisted Multimedia package and Self Learning Multimedia package are more effective for enhancing the delayed post-test achievement of intellectually superior students compared to the Activity Oriented Method'* is accepted.

Conclusion

The present study indicate that the self learning multimedia package is very effective than that of the traditional way of teaching. The post-test means achievement scores of the experimental group showed higher value. This implies that the intellectually superior students who were taught Chemistry through multimedia package had shown significant improvement in their achievement. This suggests that self learning multimedia package contributed better achievement in the present scenario, therefore this type of multimedia packages should include in our curriculum. Similarly, the self learning multimedia package is very effective for students with medium of instruction in their achievement in Chemistry in both post-test and delayed post-test.

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