Effectiveness of Multimedia and Co-Operative Learning Strategies at Secondary Level

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ABSTRACT A study on effectiveness of multimedia and co-operative learning strategies at secondary level was carried out with 600 children of government and private schools. Cluster sampling technique was used for selecting the sample. Quasi experimental method was followed and the results revealed that the mean gain scores of 3 groups (control group, experimental group 1, experimental group 2) significantly differ from each other with regard to type of school

Education is a tripolar process; the teacher, the pupil and the subject constitute its three focal points. Teaching is a bipolar process, as it communicates in terms of reaction and interaction of minds. According to the recommendations of Kothari Commission (1964-66), "It is necessary to adopt new and dynamic methods of education which emphasize individual attention and learning rather than rote memorization and teaching which characterize the existing educational system. Emphasis should be placed on the awakening of curiosity and the development of such skills of self learning". The multimedia instructional strategies have the potentiality of facilitating better communication and retention in the teaching-learning process. Co-operative learning stands for a learning strategy in which students are provided with opportunities to learn by themselves in a group in a co-operative way.

NEED FOR THE STUDY

Students' understanding of concepts, principles, and contents become effective when they are taught by innovative method like Multimedia, Co-operative learning, etc. Teaching by multimedia provides lesson by converting ideals into visuals which is a highly technical task. Co-operative learning approaches provide opportunities for supportive relationships. This study is an attempt to produce multimedia package and co-operative learning on "The effectiveness of Multimedia and Co-operative learning strategies at secondary level", and to find out the results on learning in social studies.

STATEMENT OF THE PROBLEM

The problem of the present study is the "The effectiveness of Multimedia and Co-operative learning strategies at secondary level".

OBJECTIVES OF THE STUDY

1. To find out the effectiveness of multimedia package for teaching social studies of the IX standard students with respect to type of school.
2. To compare the effectiveness of multimedia instructional strategy with that of the conventional method of teaching with respect to type of school.
3. To find out the effectiveness of Co-operative learning in the academic achievement of IX standard students in Social Studies with respect to type of school.
4. To compare the effectiveness of Co-operative learning in the academic achievement of the students of Class IX in Social Studies with conventional learning with respect to type of school.
5. To compare the effectiveness of Multimedia and Co-operative learning strategies with respect to type of school.

HYPOTHESES OF THE STUDY

1. There is no significant difference between the pre-test and post-test mean scores of the government school students of control group.
2. There is no significant difference between the pre-test and post-test mean scores of the government school students of experimental group1.
3. There is no significant difference between the pre-test and post-test mean scores of the government school students of experimental group 2.
4. There is no significant difference between the pre-test and post-test mean scores of the private school students of the control group.
5. There is no significant difference between the pre-test and post-test mean scores of the private school students of the experimental group1.
6. There is no significant difference between the pre-test and post-test mean scores of the private school students of the experimental group 2.
7. There is no significant difference in the pre-test mean scores of the government school students among the groups, control, experimental 1 and experimental 2.
8. There is no significant difference in the pre-test mean scores of the private school students among the groups, control, experimental 1 and experimental 2.
9. There is no significant difference in the post test mean scores of control groups, experimental 1 and experimental 2 of government school students.
10. There is no significant difference in the post test mean scores of the control groups, experimental 1 and experimental 2 of private school students.

METHODOLOGY

Cluster sampling technique was used for selecting the sample. A total of 600 students was selected as the sample for the study. There were 3 groups of 200 students each. Of these three groups two groups were treated as experimental groups and the other group was treated as control group. Pre-Test Post-test Control Group Design was used for the study. An achievement test in Social Studies was standardized by the investigator. It consisted of 75 objective type items before pilot study out of which 50 items were selected for the final test. Each correct response was given one mark and each wrong answer was given zero mark.

RESULTS AND DISCUSSION
TABLE 1
COMPARISON BETWEEN PRE-TEST AND POST-TEST MEAN SCORES OF THE CONTROL GROUP, EXPERIMENTAL GROUP 1 AND EXPERIMENTAL GROUP 2 OF GOVERNMENT SCHOOL STUDENTS BY USING THE t- TEST

Group	Pre test			Post - test			t
	N	Mean	SD	N	Mean	SD	
Control	93	19.68	4.36	93	20.73	4.65	7.45
Experimental 1 (Mulimedia)	109	18.63	4.67	109	23.14	4.72	35.23**
Experimental 2 (Cooperative learning)	107	18.65	4.33	107	24.40	4.73	29.24**

**Significant at 0.01% level.

The table shows that the computed 't' value of control group is 7.45 which is significant at 0.01 level. In case of experimental group 1, 't' value is 35.23 which is higher than the table value and shows there is significant difference between the pre-test and

post-test scores of multimedia group. The comparison between the pre-test and post test scores of co-operative learning group students from government schools shows the 't' value 29.24. It implies that the calculated value is higher than the table value.

Hence, the stated hypothesis 1 "There is no significant difference between the pre-test and post-test scores of government school students of control group" was rejected.

The stated hypothesis 2 "There is no significant difference between the pre-test and post-test scores of government school students of experimental group 1" was rejected.

The stated hypothesis 3 "There is no significant difference between the pre-test and post-test scores of government school students of experimental group 2" was rejected.

TABLE 2
COMPARISON BETWEEN PRE-TEST AND POST-TEST MEAN SCORES OF THE CONTROL GROUP, EXPERIMENTAL GROUP 1 AND EXPERIMENTAL GROUP 2 OF PRIVATE SCHOOL STUDENTS

Group	Pre test			Post - test			t
	N	Mean	SD	N	Mean	SD	
Control	107	18.70	4.60	107	19.91	4.87	7.23 **
Experimental 1 (Mulimedia)	91	17.59	4.52	91	21.91	4.81	31.32**
Experimental 2 (Cooperative learning)	91	18.55	4.77	93	24.65	4.99	29.72**

**Significant at 0.01% level.

The table shows that there is significant difference in the post-test performance of private school students of control group taught through multimedia approach and shows that there is significant difference between pre-test and post test scores of private school students. The achievement of experimental group 1 and experimental group 2 was higher than that of control group.

Hence, the stated hypothesis 4 "There is no significant difference between the pre-test and post-test scores of private school students of control group", was rejected.

The stated hypothesis 5 "There is no significant difference between the pre-test and post-test scores of private school students of experimental group 1",was rejected.

The stated hypothesis 6 "There is no significant difference between the pre-test and post-test scores of private school students of experimental group 2" was rejected.

TABLE 3
COMPARISON BETWEEN PRE-TEST SCORES OF GOVERNMENT SCHOOL STUDENTS OF THE CONTROL GROUP, EXPERIMENTAL GROUP 1 AND EXPERIMENTAL GROUP 2

Group	N	Mean	SD	F
Control	93	19.6882	4.3638	
Experimental 1 (Mulimedia)	109	18.6330	4.6779	1.7779 NS
Experimental 2 (Co-Operative Learning)	107	18.6542	4.3352	
Total	309	18.9579	4.4788	

NS Not Significant.

The table shows that there is no significant difference between the pretest scores of government school students. Hence the stated null hypothesis 7 was accepted: There is no significant difference in the pretest means scores of the government school students among the three groups, control, experimental 1 and

experimental 2.

TABLE 4
COMPARISON BETWEEN PRE-TEST SCORES OF PRIVATE SCHOOL STUDENTS OF THE CONTROL GROUP, EXPERIMENTAL GROUP 1 AND EXPERIMENTAL GROUP 2

Group	N	Mean	SD	F
Control	107	18.7009	-	
Experimental 1 (Multimedia Learning)	91	17.5934	4.5289	1.6004 NS
Experimental 2 (Co-Operative Learning)	93	18.5591	4.7764	
Total	291	18.3093	4.6476	

NS Not Significant.

The obtained F value is less than the table value for 2 and 288 degrees of freedom. It indicates that the computed F value is not significant at 0.01 level. Hence the stated null hypothesis 8 "There is no significant difference in the pre-test mean scores of the private school students among the three groups, control, experimental 1 and experimental 2" is accepted.

TABLE 5
COMPARISON BETWEEN POST-TEST SCORES OF GOVERNMENT SCHOOL STUDENTS OF THE CONTROL GROUP, EXPERIMENTAL GROUP 1 AND EXPERIMENTAL GROUP 2

Group	N	Mean	SD	F ratio value
Control	93	20.7312	4.6535	
Experimental 1 (Multimedia Learning)	109	23.1468	4.7294	15.4496 **
Experimental 2 (Co-Operative Learning)	107	24.4019	4.7322	
Total	309	22.8544	4.0236	

** Significant at 0.01 level.

The table shows a significant difference in the post test mean scores of the government school students among the three groups, control, experimental 1 and experimental 2. The achievement of the experimental group 2 is higher than the performance of experimental group 1. So the stated hypothesis 9 "There is no significant difference in the post test mean scores of the control, experimental 1 and experimental 2 groups of government school students" was rejected.

TABLE 6
COMPARISON BETWEEN POST-TEST SCORES OF PRIVATE SCHOOL STUDENTS OF THE CONTROL GROUP, EXPERIMENTAL GROUP 1 AND EXPERIMENTAL GROUP 2

Group	N	Mean	SD	F
Control	107	19.91	4.87	
Experimental 1 ((Multimedia Learning))	91	21.91	4.81	23.3912 **
Experimental 2 (Co-Operative Learning)	93	24.65	4.99	
Total	291	22.05	5.25	

**Significant at 0.01 level.

The calculated F value shows there is a high level of significance. Both the treatments given were highly effective. The mean values of experimental 1 and experimental 2 groups were higher than the control group. Experimental group 2 achieved higher than the other two groups. So the stated hypothesis 10 "There is no significant difference in the post test mean scores of the control, experimental 1 and experimental 2 groups of private school students" was rejected.

TABLE 7
COMPARISON BETWEEN SCORE DIFFERENCE (POST-PRE-TEST) OF GOVERNMENT SCHOOL STUDENTS AMONG THE CONTROL GROUP, EXPERIMENTAL GROUP 1 AND EXPERIMENTAL GROUP 2

Group	N	Mean	SD	F
Control	93	1.043	1.3506	
Experimental 1 (Multimedia Learning)	109	4.5138	1.3376	223.1015**
Experimental 2 (Co-Operative Learning)	107	5.7477	2.0332	
Total	309	3.8964	2.5265	

**Significant at 0.01 level.

The obtained F value is greater than the required tabulated value for 2 and 306 degrees of freedom. This indicates that the computed 'F' value is significant at 0.01 level. It is concluded that the mean gain scores of 3 groups are significantly different from each other.

TABLE 8
COMPARISON BETWEEN SCORE DIFFERENCE (POST-PRE-TEST) OF PRIVATE SCHOOL STUDENTS OF THE CONTROL GROUP, EXPERIMENTAL GROUP 1 AND EXPERIMENTAL GROUP 2

Group	N	Mean	SD	F
Control	107	1.2150	1.7376	
Experimental 1 (Multimedia Learning)	91	4.3187	1.3155	211.74
Experimental 2 (Co-Operative Learning)	93	6.0968	1.9785	
Total	291	3.7457	2.6686	

**Significant at 0.01 level.

The obtained 'F' value is greater than the required tabulated value for 2 and 288 degrees of freedom. This indicates that the computed 'F' value is significant at 0.01 level. It is concluded that the mean gain scores of 3 groups significantly differ from each other.

CONCLUSION
Through this study it was proved that the pre-test scores were not significant for the three groups and the post-test scores were found significant.

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