Educational Administration: Theory and Practice
2024,30(6), 4790- 4797
ISSN:2148-2403
https://kuey.net/

Research Article

Effect of Multimedia Approach on the Learning of Geographic Content by Elementary School Going Students: An Experimental Study

Parishmita Kakati[1*], Prof. K.C. Kapoor[2]

[1*]Research Scholar: Department of Education, Assam Don Bosco University
[2]Department of Education, Assam Don Bosco University

Citation: Parishmita Kakati, et al (2024), Effect of Multimedia Approach on the Learning of Geographic Content by Elementary School Going Students: An Experimental Study, *Educational Administration: Theory and Practice*, 30(6), *4790- 4797*
Doi: 10.53555/kuey.v30i6.8295

ARTICLE INFO

ABSTRACT

Science and Technology is playing a crucial role in every walk of life now a days. Moreover, the world is changing very fast and it has entered into the 21st century. The present century is the century Information and Communication Technology (ICT). Because of the development and use of ICT, the new society is emerging. This is the society which makes use of digitization for every purpose. The process of education has been greatly influenced by the applications of ICT.Educational process has been revolutionized in the Western World by way of adopting new approaches of teaching and learning. These modern approaches of teaching emphasize on the various principle of Instructional technology. In teaching Geography, one of the main parts of Social Science. Geography is a highly visual subject and is complemented with the use of multimedia resources. Audio-visual resources have been used effectively at educational institutions to support teaching and learning in Geography. Visual presentations and representation are integral parts of Geography education (for an example: imported digital images, PowerPoint presentations, satellite images via the World Wide Web, etc) (Mayer,2005). This experimental study is an attempt to investigate the effect of multimedia approach on the learning of geographic content by the 7th grade learners. The main purpose of this experimental study is to find out difference between the academic achievement of 7th grade learners taught through multimedia approach and conventional method of teaching in geographic learning. The major findings of this study will aspire for to have some expressive suggestions for researchers, academicians, learners, teachers and society in terms of a workable teaching strategy for teaching student's different contents at different levels.

Key words: Effect, multimedia approach, academic achievement

1. Introduction:

According to Swami Vivekananda **"Education is not just the accumulation of facts, but the training of the mind to think independently".** Education as a system is a technological process which has the potentiality of providing an integrated framework for achievement of the educational aims and objectives (Rao,2012). Since the beginning of ancient period, teacher and his teaching remained a matter of great concern. The education system of the ancient period has unique characteristics and qualities. The Gurukul (ashram) was the type of school in ancient India. The students resided in the ashram of the teachers at a distance from their parents. In this period, education was provided in terms of various fields, i.e. playing of musical instruments, dancing, singing, housekeeping, artworks, handicrafts and other creative activities. (Kapoor,2020) In the education system in ancient India, the students were totally devoted towards their studies and they practiced meditation and listening skills in an effective manner. Our present-day education system has a lot to learn ancient education system of India.In the present situation, the home education has undergone rapid trasformations and has progressed altogether into different shape. One of the tasks faced by teachers is to

address the issue of diversity among the learners within a classroom in terms of their academic aptitudes, learning styles, unique personalities etc. Method of teaching also plays an important role in effective transfer of concepts and skills to the target group of students. In the modern scientific period conventional teaching methods are not enough to stimulate interest among learners, technological learning become the most important integral part of our lives.

1.1 Multimedia Approach of Teaching:

In the modern scientific, technical and technological age, traditional teaching methods are not serving the purpose as it is the age of LPG and quality works everywhere to meet up the requirements. Generally, teachers use a single medium for imparting instruction in the classroom and as a result a large number of students are unable to receive the whole subject matter which the teacher's intent to give the students. On the other hand, a teacher uses audio- visual aids, charts, maps, slide projector, demonstration etc, the teacher is definitely able to transmit the content to all categories of students conveniently. Moreover, there are technological inputs (hardware's and software's) which the teacher may use in the form of assistive desires under the process of communication in any of the classroom situation and which is popularly called as multimedia approach.

In brief, we can say that multimedia approach is that approach of teaching and learning process under which the teacher employs a good number of media with proper planning and makes use of those media systematically for achieving the predetermined instructional objectives judiciously, efficiently and economically. The basic features of multimedia approach are put as under:

Features of Multimedia Approach:

1. It is an approach of teaching under which the teacher uses varieties of media.
2. Multimedia approach is the outcome of various researches and experiments.
3. This is the approach of teaching which provides varieties of learning experiences and the students are able to use their different senses.
4. The students perceive the concepts in such a way that the concepts become permanent with clarity in the minds of the students.
5. This is the approach which makes use of all types of hardwares and softwares which enable the students to learn the course content effectively.

2. Need and Importance of the Study:

In the present time, teaching- learning process in classroom is not limited to chalk and talk method, now a day, teaching method that led to learning experiences through which learners try to attain the specific objectives. In this energy a teacher uses several media like, audio, visual, single or multimedia package. Multimedia can be a powerful tool in exploring the nature of the world around us, including its technological systems. Multimedia access to knowledge is one of the possibilities of information and communication technology that has wonderful impact on teaching-learning. The instructional media have occurred in a variety of resources, and equipment, which can be used to supplement or complement the teachers' labours in ensuring effective learning by students. Multimedia activities inspire the students to work in groups, express their knowledge in multiple ways, motivated them to solve their problems, revise their own work, and construct knowledge.

The effectiveness of Multimedia Approach had been established in the studies by Singh, Sharma and Kaur (2015); Bala (2020); Vishwanath (2023); Selvaganesan and Jayachithra (2021); Almara'beh, Amer and Sulieman (2015); Bulut (2019); Samanta and Das (2017); Kaur,

Singh and Singh (2015); Liu (2010); Liu and Long (2014); Gilakjani (2012); Namitha (2018); Kaur (2013); Gupta and Yadav (2024); in international ,national and north-east level. It shows that Multimedia Approach of teaching have been found greater to conventional method of teaching. From this it is suggested that the multimedia approach of teaching may be approved safely by the teachers to teach different contents effectively and encouraging maximum learning among the students.

The researcher felt that the need to study the academic achievement of 7^{th} grade learners in their geographic learning. In accordance the Multimedia Approach material has been developed to study the difference between the academic achievement on summative criterion test.

3. Statement of the Research Problem:

The research problem is hereby stated as: "Effect of Multimedia Approach on the Academic Achievement of Elementary school going learners in Social Studies with special reference to Geographic Content: An Experimental study".

4. Objectives of the Study:

i. To find out the effectiveness of Multimedia Approach on the geographic learning by 7^{th} grade learners immediately after the completion of experiment.

ii. To find out the effectiveness of Multimedia Approach on the geographic learning by 7^{th} grade learners two-

week delayed performance after the completion of experiment.

5. Hypotheses of the Study:

i. There is no significant difference between the academic performance of 7^{th} grade learners on criterion test immediately after the completion of experiment.

ii. There is no significant difference between the academic performance of 7^{th} grade learners on criterion test two-week delayed performance after the completion of experiment.

6. Methodology:

The nature of the study clearly indicates that is based classroom teaching involving the teacher and the students. As the main aim of the study is to investigate the effect of MMA on the academic performance of 7^{th} grade learners in Geography. Therefore, the investigator thought appropriately and adopted experimental method of educational research. In view of the nature of the method of research, the sample of 7^{th} grade students was divided into two equivalent groups. These two groups were designated as an experimental group and control group. Further it is important to mark that each group was having 25 7^{th} grade learners of Rajgarh Academic Centre school located in Dibrugarh District of Assam. For the completion of the experiment, the investigator used Pre-test and Post-test Experimental Design.

7. Tools Used in the Study:

The researcher used the following materials and tools for completing the experiment and obtaining the required data:

i. Developed Instructional Material in time with Multimedia Approach covering the course content of 7^{th} class students of Geography.

ii. Formative Tests Relating to Geographic Content of 7^{th} class.

iii. Criterion Test to measure the final performance of the students of experimental and control groups.

iv. Attitude Scale to measure the attitude of 7^{th} grade learners towards MMA. All the above stated tools have been developed and used for collecting relevant data.

8. Experimentation:

For the purpose of experimentation, the investigator took permission from the Principal of Rajgarh Academic Centre school located in Dibrugarh District of Assam. A little awareness created among the 7^{th} grade learners and their teachers of the school for seeking their cooperation in running the experiment successfully. The selected sample of 50 7^{th} grade learners divided into two groups by designating as the Experimental Group and Control Group. Summative criterion test was administered on both the groups for obtaining Pre-test scores.

The experiment was carried out in three phases:

Phase -I: The researcher administered the Summative Criterion test on the learners of Experimental Group and Control Group. The scoring work was completed and Pre-Test scores were obtained for the students of both the groups and these obtained Pre-Test scores have been put in Table- 1

Phase II: After obtaining the Pre-Test scores of Experimental Group and Control Group, the researcher carried out the experiment. The Experimental Group was taught the course content of the units on 'Environment' and its different elements by adopting MMA of teaching and the Control Group was taught through conventional method of teaching. At the end of the completion of the experiment, the researcher administered the summative criterion test on both the groups for obtaining the immediate Post-Test Scores and the obtained immediate Post-Test Scores have been shown in table-2

Phase -III: After obtaining the immediate Post-Test scores of both the groups, there was a gap of two weeks and the researcher re-administered the Summative Criterion Test on the learners of Experimental and Control Groups for obtaining the two weeks delayed performance of the learners. The obtained two weeks delayed performance scores of both the groups have been put in table-3

Table 1: Pre-test scores of MMA and CMT groups on Summative Criterion Test

Sl/No of Students	G-A Multimedia Media Approach Group (MMA): ExG	G-B Conventional Method of Teaching (CMT) Group:CG

1	40	30
2	22	30
3	33	27
4	47	47
5	21	37
6	20	38
7	33	40
8	57	32
9	23	34
10	23	36
11	57	40
12	36	34
13	23	30
14	18	40
15	47	40
16	49	40
17	58	34
18	25	40
19	34	36
20	30	40
21	34	27
22	43	34
23	56	33
24	16	40
25	72	30
	$\sum X_1$**=917**	$\sum X_2$**=843**

Table 2: Immediate Post-test scores of MMA and CMT groups on Summative Criterion Test

Sl/No of Students	**G-A Multimedia Media Approach Group (MMA): ExG**	**G-B Conventional Method of Teaching (CMT) Group:CG**
1	90.5	31
2	82	35
3	98	30
4	88.5	47
5	82	37
6	97	38
7	84.5	40
8	85.5	32
9	89	34
10	83	40
11	85.5	34
12	81.5	35
13	102	30
14	87	40
15	89	40
16	83	34
17	83	40
18	83	40
19	89	36
20	98	30
21	83	34
22	93	35
23	88.5	35
24	102	40
25	107	30
	$\sum Y_1$**=2235**	$\sum Y_3$**=897**

Table 3: Two-weeks delayed performance scores of MMA and CMT groups on Summative Criterion Test

No. of Students	G-A (Y_1) Multimedia Media Approach Group (MMA)	G-C (Y_3) Conventional Method of Teaching (CMT) Group
1	90	31
2	82	34
3	97	30
4	87	46
5	80	37
6	96	38
7	84	40
8	85	32
9	89	34
10	83	40
11	85	34
12	82	35
13	102	30
14	86	40
15	89	40
16	83	40
17	82	34
18	82	40
19	88	40
20	96	36
21	83	30
22	92	34
23	87	35
24	102	40
25	106	30
	$\sum Y_1$=2218	$\sum Y_3$=900

9. Analysis and Interpretation of Results:

For the purpose of analysis of the obtained Pre-Test and Post-Test scores of Experimental and Control groups of the learners, Analysis of Covariance adopted as the statistical technique. The complete analysis of data was done and the computed results in accordance with the formulated objectives and hypotheses are stated as under:

Objective 1: To find out the effectiveness of Multimedia Approach on the geographic learning by 7th grade learners immediately after the completion of experiment.

Hypothesis 1: There is no significant difference between the academic performance of 7th grade learners on criterion test immediately after the completion of experiment.

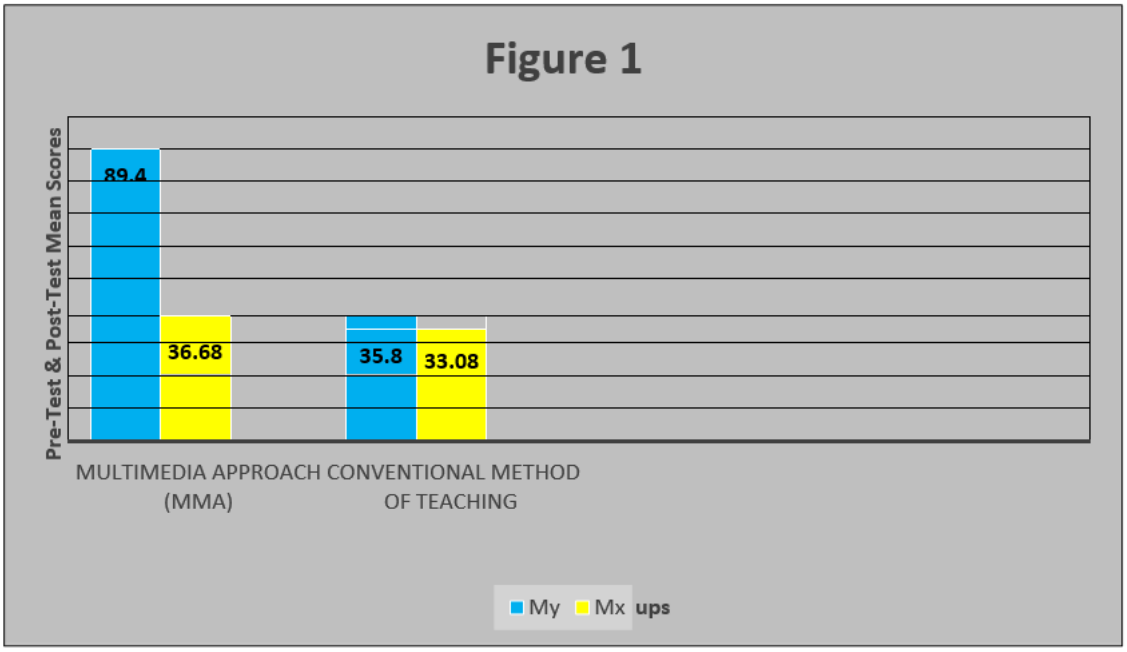
Table-4: Summary of computed Immediate Academic Performance of 7^{th} Grade Learners of MMA and CMT

Components of Variability	Sum of Squares (SS)	df	Variance (V)	F
Between samples or treatments, D	34,451.28	1 (C -1)	34,451.28	1194.5
Within samples of errors,E_W	1355.74	47 (N-C-1)	28.84	
Total,E_t	35,807.02	48 (N-2)		

Table 5: Adjusted Mean of Summative Criterion Test Scores of Frist Group (MMA) and Second Group (CMT)

Group	No. of students in the Group	M_y	M_x	Adjusted Mean M_{YX}
Multimedia Approach (MMA)	25	89.4	36.68	88.7
Conventional Method of Teaching (CMT)	25	35.8	33.72	36.4
			GM_x =35.1	

Figure 1: Effect of the treatments on pre-test and post-test immediate performance criterion scores of the MMA & CMT groups



Interpretation:

The table 4 shows that the calculated F-value came out to be 1194.5 which is greater than the criterion F -value (7.23) at 0.01 level of significance for 1/47 df.As the calculated F-value (1194.5) is greater than the criterion F-value (7.23) at 0.01 level of significance for 1/47 df,therefore,the formulated hypothesis: "There is no significant difference between the academic performance of 7th grade learners on criterion test immediately after the completion of experiment." got rejected. It means that there is a significant difference in the immediate academic performance of students of MMA and CMT groups on the summative criterion test.Now, it is significant to note, as revealed in table 5 that the mean score of MMA group came out to be 88.7 (80.63%) and the mean score CMT group came out to be 36.4 (33.09%) on the summative criterion test for their immediate performance which shows that the Multimedia Approach of teaching has been effective to bring out the class 7^{th} students of Rajgarh Academic Centre at suitable desired level of learning.

Objective 2: To find out the effectiveness of Multimedia Approach on the geographic learning by 7th grade learners two-week delayed performance after the completion of experiment.

Hypothesis 2: There is no significant difference between the academic performance of 7th grade learners on criterion test two-week delayed performance after the completion of experiment.

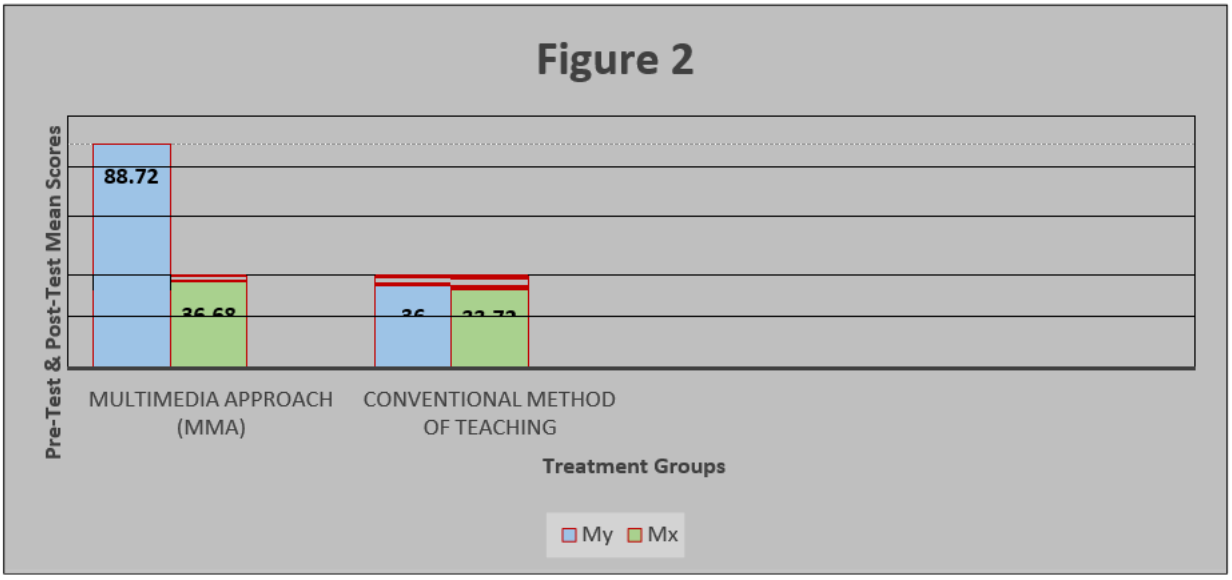
Table 6: Summary of computed Two-week Delayed Academic Performance of 7^{th} Grade Learners of MMA and CMT

Components of Variability	Sum of Squares (SS)	df	Variance (V)	F
Between samples or treatments, D	363.84	1 (C -1)	363.84	13.33
Within samples of errors,E_W	1282.9	47 (N-C-1)	27.29	
Total,E_t	1,646.74	48 (N-2)		

Table 7: Adjusted Mean of Summative Criterion Test Scores of Frist Group (MMA) and second Group (CMT)

Group	No. of students in the Group	M_y	M_x	Adjusted Mean M_{YX}
Multimedia Approach (MMA)	25	88.72	36.68	88.13
Conventional Method of Teaching (CMT)	25	36	33.72	36.59
			GM_x =35.2	

Figure 2: Effect of the treatments on pre-test and post-test delayed performance criterion scores of the MMA & CMT groups



Interpretation:

The table 6 shows that the calculated F-value came out to be 13.33 which is greater than the criterion F -value (7.23) at 0.01 level of significance for 1/47 df.As the calculated F-value (13.33) is greater than the criterion F-value (7.23) at 0.01 level of significance for 1/47 df,therefore,the formulated hypothesis: "There is no significant difference between the academic performance of 7th grade learners on criterion test two weeks delayed performance after the completion of experiment." got rejected. It means that there is a significant difference in the immediate academic performance of students of MMA and CMT groups on the summative criterion test.Now, it is significant to note, as revealed in table 7 that the mean score of MMA group came out to be 88.72 (80.65%) and the mean score CMT group came out to be 36 (32.72%) on the summative criterion test for their immediate performance which shows that the Multimedia Approach of teaching has been effective to bring out the class 7^{th} students of Rajgarh Academic Centre at suitable desired level of learning.

Conclusion:

Taking the stock of computed results and their interpretations, finally it is concluded that the MMA of teaching has been found quite effective in the teaching and learning of 7^{th} grade learners in the process of imparting the geographic content as compared to the conventional method of teaching. Therefore, MMA may be used for teaching and learning of any other subject at elementary school stage across the state. Further it has also been observed that the 7^{th} grade liked this (MMA) new approach of teaching and the learners showed their satisfaction on the use of it.

References:

1. Agarwal, P. (2006). Higher Education in India: The Need for Change.*New Delhi: Indian Council for Research on International Economic Relations*, ICIER Working Paper No.180.
2. Bala, P. (2020). Impact Of Multimedia and Mastery Learning Approaches on Achievement in Mathematics in Relation to Interest Among Fifth Class Students with Mathematical Difficulties. *A Thesis Submitted to the Faculty of Education Panjab University*, Chandigarh for the degree of Doctor of Philosophy.
3. Berk, R. A. (2009). Multimedia teaching with video clips: TV, movies, YouTube, and mtvU in the college

classroom. International Journal of Technology in Teaching and Learning, 5(1), 1–21.
4. Bulut, R. (2019). An Analysis of the Effects of Multimedia Teaching on Student Achievement.
5. International Journal of Progressive Education, Vol 15, No 1.
6. Mayer, R. (2005). The Cambridge Handbook of Multimedia Learning, *Cambridge University Press, New York*.
7. Mayer, R.E. (2001). Multimedia Learning. *United States of America by Cambridge University Press, New York*, ISBN-13 978-0-511-50070-1.
8. Das, A &Samanta, A. (2019). Effectiveness of Interactive Multimedia Approach for Physical Science on Secondary Level in Rural Area. *International Journal of Research*, Vol-3; Issue- I & II, ISSN 2394-885X.
9. Vishwanath, H.N. (2023). Impact of Multimedia Approach on The Achievement of Secondary School Students in Science. *Journal of Emerging Technologies and Innovative Research*, Volume 10, Issue 5, Retrived from www.jetir.org.
10. Kaur, R., Sharma, K., & Singh, S. (2015). Effectiveness of Multimedia Approach on the Academic Achievement of Class 8th students in English. *International Journal of Applied Research ,1(9):* 467-471, ISSN Online: 2394-5869.
11. Kapoor, K.C. (2020). Teaching of Geography for Secondary School Teachers.*DVS Publishers*, ISBN:978-9385839-38-2.
12. Bulut, R. (2019). An Analysis of the Effects of Multimedia Teaching on Student Achievement.
13. International Journal of Progressive Education, Vol 15, No 1.
14. Selvaganesan, R., & Jayachithra, J. (2021). Effectiveness of Multimedia Strategies in Learning Science. *Turkish Online Journal of Qualitative Inquiry (TOJQI)*, Vol 12, Issue 8,7947- 7954.
15. Liu, J. (2010). An Experimental Study on the Effectiveness of Multimedia in College English Teaching. *English Language Teaching*, Vol. 3, No. 1.
16. Das, A &Samanta, A. (2019). Effectiveness of Interactive Multimedia Approach for Physical Science on Secondary Level in Rural Area. International Journal of Research, Vol-3; Issue- I & II, ISSN 2394-885X.
17. Almarabeh, H., Amer, E.F., &Sulieman, A. (2015). The Effectiveness of Multimedia Learning Tools in Education. *International Journal of Advanced Research in Computer Science and Software Engineering*, Volume 5, Issue 12, ISSN:2277 128X.
18. Ancient Education System of India. (2020). Retrived December 16,2020 from ncert.nic.in