

A Study of Relationship between Academic Achievement in Geography and Multimedia Approach among Secondary School Students

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Abstract : The use of multimedia in teaching and learning leads to higher academic achievement. Multimedia refers to any computer mediated software or interactive application that integrate text, colour, graphical images, animation, audio sound and full motion video in a simple application. Multimedia learning system offer a potentially venue for improving students understanding about the subject. In the present study, investigator intends to findout the relationship between multimedia approach and academic achievement in geography among the secondary school students. Investigator used the experimental method in the study. Investigator designed the multimedia instruction design on five units of eighth standard geography subject. Investigator found the reliability of the tool by administering it on hundred students of Eighth standard by test and re-test method and found 'r' 0.98 which is highly reliable. Investigator also found the validity of the tool by seeking the opinions of experts. The sample of the study consists of eighty eighth standard students (forty Experimental and forty control group). Investigator used correlation technique for the analysis of the collected data. The results of the study indicates that there is a positive relationship between some pre-test, post-test, delayed test academic achievement and intelligence scores of experimental and control group, Boy and Girl students towards multimedia approach in geography are dependent on each other. But in some tests they are 'independent.

Index Terms- Multimedia, Control and Experimental group. Pre-test, Post-test, delayed test, academic achievement.

I. INTRODUCTION

The rapid increase in the availability of computers and other technologies in schools have made significant changes in education system. The teachers' role changes to that of a coach or guide as well as an instructor. The teacher skill is using technology is a major factor in improving students' learning with technology. The teachers must know not only how to use technology but also when and why to use it Multimedia-media can provide a large amount of instructional information to the students for the purpose of learning and accelerate the process of information searching.

National Curriculum Framework -2005

The present education system in India is closed system when the entire control of the learning process is with the teacher or with an equivalent authority who frames the curriculum. It is greatly teacher directed curriculum pre-decides which is to be learned ? why it is to be learned? How it is to be learned? When, where and at what age it has to be learned ? As a result, the pupil becomes a passive receiver of knowledge with little or no control over his/her learning. The National Curriculum Framework - 2005 lays a strong emphasis on the need to recognize the child as a natural learner and knowledge as the outcome of the children own activity. In the everyday lives outside the school, we witness the children enjoying the curiosity, inventiveness and constant querying. The activities engaged with the world around them explaining, responding, viewing and working things out and making meaning.

Today, a great challenge for the teacher is to meet the individual needs of the students in a classroom setting characterized by multiple abilities, environment and social development leading to increased demands on teacher time and effort. Yet, inspite of the best efforts, a classroom may not be able to completely meet the needs of the pupil. Obviously a satisfactory learning experiences could be achieved only by making use of multimedia approach in teaching and learning process. Media is defined as all means of communication, whatever its' format. In this sense, media include symbol system as diverse as print, graphics, animation, audio and motion pictures. Technology is defined as 'any object or process of human origin that can be used to convey media. In this sense, technology includes phenomena as diverse as books, films, television and the internet.

Need of the Study

Multimedia is the integration of more than one medium into some form of communication or experience delivered via a computer. Mediated software or interactive application that integrates text, colour, graphical images, animation, audio sound and full motion video in a single application. The National Policy on Education-1986, also envisaged the importance and role of media and educational technology in teaching and learning process. In the classroom, multimedia can bridge the gap between

theory and practice by giving students the opportunity to practice what they have learnt in safe and controlled environment. The multimedia encourages students' learning in effective manner. Hence, multi-media provides a powerful tool for teaching-learning process. Numerous research studies have shown that multimedia are effective means of achieving instructional objectives and students enjoy learning through multimedia. Geography is also one of the science subjects. Some of the topics are having very hard concept to teach the school students and very difficult to develop the concepts of geography among students. Therefore, today's teachers are using multimedia for teaching geography subject at High school level. In the present study, investigator has designed multimedia instructional approach on 8th standard geography units like-The Earth, Lithosphere, Atmosphere, Hydrosphere and Biosphere and tried to find out the effectiveness of multimedia instructional package and academic achievement of students.

Objectives of the Study

The objectives of the present study are ;

1. To study the relationship between pre-test, post-test and delayed academic achievement scores with intelligence scores towards multimedia approach of secondary school students in geography.
2. To study the relationship between pre-test, post-test and delayed academic achievement scores with intelligence scores towards multimedia approach of secondary school students in geography with control group.
3. To study the relationship between pre-test, post-test and delayed academic achievement scores with intelligence scores towards multimedia approach of secondary school students in geography with experimental group.
4. To study the relationship between pre-test, post-test and delayed academic achievement scores with intelligence scores of boy students of secondary school towards multimedia approach in geography.
5. To study the relationship between pre-test, post-test and delayed academic achievement scores with intelligence scores of girls students of secondary school towards multimedia approach in geography.

Hypotheses of the Study

The hypotheses of the study are

1. There is no significant relationship between pre- test, post-test and delayed academic achievement scores with intelligence scores towards multimedia approach of secondary school students in geography.
2. There is no significant relationship between pre- test, post-test and delayed academic achievement scores with intelligence scores towards multiple approach of secondary school students in geography with control group.
3. There is no significant relationship between pre- test, post-test and delayed academic achievement scores with intelligence scores towards multimedia approach of secondary school students in geography with experimental group.
4. There is no significant relationship between pre-test, post-test and delayed academic achievement scores with intelligence scores of boy students of secondary school towards multimedia approach in geography.
5. There is no significant relationship between pre-test, post-test and delayed academic achievement scores with intelligence scores of girl students of secondary school towards multimedia approach in geography.

II. DESIGN OF THE STUDY

Investigator used experimental method in the present study. Investigator constructed the multimedia instructional package on 5 units of Eighth standard geography subject on Earth, Lithosphere, Hydrosphere, Atmosphere and Biosphere and also constructed achievement test which consists of 50 multiple choice items. To find out the effectiveness of the tool, investigator has administered it on one hundred Eighth standard students of Kanara English High school, Bengaluru by test and re-test method and found 'r' 0.98 which is highly reliable. Investigator found the validity of the tool by seeking the opinions of the experts. The sample of the study consists of Eighty Eighth standard students of Government high school, Chikkabidarakallu, Bengaluru, North district Bengaluru. The sample was selected by conducting Non-verbal group intelligence test constructed by Imtisungba 4.0 (Kohima). Forty students (20+20 Boys and Girls) formed as control group and forty students (20+20 Boys and girls) formed as experimental group by scoring the marks of non-verbal group intelligence test in descending order and classifying scores which are in serial number as even and odd numbers. Investigator used the Karl-pearson's correlation technique for the analysis of collected data. The variables of the study are (a) Independent variables: Multimedia approach; (b) Dependent variable: Academic achievement of Eighth standard students. (c) Moderator variable: Boy and Girl students of Eighth standard

Procedure of the study: The procedure of the study comprised of three levels. First, investigator administered multiple choice pre-test to the both experimental and control groups. Afterwards, the experimental group was given a treatment of twenty five hours of teaching geography by using specially designed multimedia instructional materials by the investigator. The control group was allowed to be taught twenty five hours of teaching of geography using the traditional method by the investigator. After the completion of the treatment, both the groups were tested for the academic achievement in geography subject by administering multiple choice post-test to both the groups. After two months gap of the post test, investigator again administered the same test on the both groups i.e., control and experimental groups. Thus, the data collected by the investigator thrice and analysed the data through Karl-Pearson's correlation statistical technique.

III. ANALYSES OF THE DATA AND RESULTS

Investigator has used the Karl-Pearson's correlation co-efficient statistical technique for the analyses of the collected data and results are presented in the following tables.

Hypothesis No-1: There is no significant relationship between pretest, posttest and delayed academic achievement scores with intelligence scores towards multimedia approach of students in Geography.

To achieve this hypothesis, the Karl Pearson's correlation coefficient technique has been applied and the results are presented in the following table.

Table-1: Results of correlation coefficient between pretest, posttest and delayed academic achievement scores with intelligence scores towards multimedia approach of students in Geography

Variable	Intelligence scores towards multimedia approach of students in Geography			
	Correlation Coefficient	t-value	P-value	Sig.
Pre-test Academic Achievement	0.3804	3.6332	0.0005	<0.05, S
Post test Academic Achievement	0.2039	1.8396	0.0696	>0.05, NS
Delayed test Academic Achievement	0.2500	2.2808	0.0253	<0.05, S

From the results of above table, it can be observed that,

1. A significant and positive relationship was observed between pretest academic achievement and intelligence scores towards multimedia approach in Geography ($r=0.3804$, $p<0.05$) at 0.05% level of significance. Hence the null hypothesis rejected and alternative hypothesis accepted. It means that, the pretest academic achievement and intelligence scores towards multimedia approach of students of secondary school in Geography are dependent on each other.
2. A non-significant and positive relationship was observed between posttest academic achievement and their intelligence scores towards multimedia approach in Geography ($r=0.2039$, $p>0.05$) at 0.05% level of significance. Hence the null hypothesis is accepted and alternative hypothesis is rejected. It can be concluded that, the posttest academic achievement and intelligence scores towards multimedia approach of students in Geography are independent on each other.
3. A significant and positive relationship was observed between delayed test academic achievement scores and their intelligence scores towards multimedia approach in Geography ($r=0.2500$, $p<0.05$) at 0.05% level of significance. Hence the null hypothesis is rejected. It means that, the delayed test academic achievement scores and intelligence scores towards multimedia approach of students in Geography are dependent on each other.

Hypothesis-2: There is no significant relationship between pretest, posttest and delayed academic achievement scores with intelligence scores towards multimedia approach of students in Geography in control group.

To achieve this hypothesis, the Karl Pearson's correlation coefficient technique has been applied and the results are presented in the following table.

Table-2: Results of correlation coefficient between pretest, posttest and delayed academic achievement scores with intelligence scores towards multimedia approach of students in Geography in control group

Variable	Intelligence scores towards multimedia approach of students in Geography in Control Group			
	Correlation Coefficient	t-value	P-value	Sig.
Pre-test Academic Achievement	0.3789	2.5240	0.0159	<0.05, S
Post test Academic Achievement	0.2284	1.4464	0.1563	>0.05, NS
Delayed test Academic Achievement	0.3098	2.0087	0.0500	<0.05, S

From the results of above table, it can be observed that,

- A significant and positive relationship was observed between pretest academic achievement and intelligence scores towards multimedia approach in Geography in control group ($r=0.3789$, $p<0.05$) at 0.05% level of significance. Hence the null hypothesis rejected and alternative hypothesis accepted. It means that, the pretest academic achievement and intelligence

scores towards multimedia approach of students of secondary school in Geography are dependent on each other in control group.

- A non-significant and positive relationship was observed between posttest academic achievement and their intelligence scores towards multimedia approach in Geography in control group ($r=0.2284$, $p>0.05$) at 0.05% level of significance. Hence the null hypothesis is accepted and alternative hypothesis is rejected. It can be concluded that, the posttest academic achievement and intelligence scores towards multimedia approach of students in Geography are independent on each other in control group.
- A significant and positive relationship was observed between delayed test academic achievement scores and their intelligence scores towards multimedia approach in Geography in control group ($r=0.3098$, $p<0.05$) at 0.05% level of significance. Hence the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the delayed test academic achievement scores and intelligence scores towards multimedia approach of students in Geography are dependent on each other in control group.

Hypothesis-No.3: There is no significant relationship between pretest, posttest and delayed academic achievement scores with intelligence scores towards multimedia approach of students in Geography in experimental group.

To achieve this hypothesis, the Karl Pearson's correlation coefficient technique has been applied and the results are presented in the following table.

Table-3: Results of correlation coefficient between pretest, posttest and delayed academic achievement scores with intelligence scores towards multimedia approach of students in Geography in experimental group

Variable	Intelligence scores towards multimedia approach of students in Geography in Experimental Group			
	Correlation Coefficient	t-value	P-value	Sig.
Pre-test Academic Achievement	0.4143	2.8065	0.0079	<0.05, S
Post test Academic Achievement	0.2865	1.8437	0.0730	>0.05, NS
Delayed test Academic Achievement	0.2585	1.6494	0.1073	>0.05, NS

From the results of above table, it can be observed that,

- A significant and positive relationship was observed between pretest academic achievement and intelligence scores towards multimedia approach in Geography in experimental group ($r=0.4143$, $p<0.05$) at 0.05% level of significance. Hence the null hypothesis rejected and alternative hypothesis accepted. It means that, the pretest academic achievement and intelligence scores towards multimedia approach of students of secondary school in Geography are dependent on each other in experimental group.
- A non-significant and positive relationship was observed between posttest academic achievement and their intelligence scores towards multimedia approach in Geography in experimental group ($r=0.2865$, $p>0.05$) at 0.05% level of significance. Hence the null hypothesis is accepted and alternative hypothesis is rejected. It can be concluded that, the posttest academic achievement and intelligence scores towards multimedia approach of students in Geography are independent on each other in experimental group.
- A non-significant and positive relationship was observed between delayed test academic achievement scores and their intelligence scores towards multimedia approach in Geography in experiment group ($r=0.2585$, $p>0.05$) at 0.05% level of significance. Hence the null hypothesis is accepted and alternative hypothesis is rejected. It means that, the delayed test academic achievement scores and intelligence scores towards multimedia approach of students in Geography are independent on each other in experimental group.

Hypothesis No.-4: There is no significant relationship between pretest, posttest and delayed academic achievement scores with intelligence scores of boy students towards multimedia approach in Geography.

To achieve this hypothesis, the Karl Pearson's correlation coefficient technique has been applied and the results are presented in the following table.

Table-4: Results of correlation coefficient between pretest, posttest and delayed academic achievement scores with intelligence scores of boy students towards multimedia approach in Geography.

Variable	Intelligence scores towards multimedia approach of boys in Geography			
	Correlation Coefficient	t-value	P-value	Sig.
Pre-test Academic Achievement	0.3004	2.0654	0.0449	<0.05, S
Post test Academic Achievement	0.1245	0.8228	0.4151	>0.05, NS
Delayed test Academic Achievement	0.2149	1.4431	0.1562	>0.05, NS

From the results of above table, it can be observed that,

- A significant and positive relationship was observed between pretest academic achievement and intelligence scores of boy students towards multimedia approach in Geography ($r=0.3004$, $p<0.05$) at 0.05% level of significance. Hence the null hypothesis rejected and alternative hypothesis accepted. It means that, the pretest academic achievement and intelligence scores towards multimedia approach of boy students of secondary school in Geography are dependent on each other.
- A non-significant and positive relationship was observed between posttest academic achievement and intelligence scores of boy students towards multimedia approach in Geography ($r=0.1245$, $p>0.05$) at 0.05% level of significance. Hence the null hypothesis is accepted and alternative hypothesis is rejected. It can be concluded that, the posttest academic achievement and intelligence scores of boy students towards multimedia approach in Geography are independent on each other.
- A non-significant and positive relationship was observed between delayed test academic achievement scores and intelligence scores of boy students towards multimedia approach in Geography ($r=0.2149$, $p>0.05$) at 0.05% level of significance. Hence the null hypothesis is accepted and alternative hypothesis is rejected. It means that, the delayed test academic achievement scores and intelligence scores of boy students towards multimedia approach in Geography are independent on each other.

Hypothesis No.5: There is no significant relationship between pretest, posttest and delayed academic achievement scores with intelligence scores of girl students towards multimedia approach in Geography.

To achieve this hypothesis, the Karl Pearson's correlation coefficient technique has been applied and the results are presented in the following table.

Table-5: Results of correlation coefficient between pretest, posttest and delayed academic achievement scores with intelligence scores of girl students towards multimedia approach of girl students in Geography

Variable	Intelligence scores towards multimedia approach of girls in Geography			
	Correlation Coefficient	t-value	P-value	Sig.
Pre-test Academic Achievement	0.5542	3.8242	0.0006	<0.05, S
Post test Academic Achievement	0.3739	2.3157	0.0269	<0.05, S
Delayed test Academic Achievement	0.4206	2.6629	0.0119	<0.05, S

From the results of above table, it can be observed that,

- A significant and positive relationship was observed between pretest academic achievement and intelligence scores of girl students towards multimedia approach in Geography ($r=0.5542$, $p<0.05$) at 0.05% level of significance. Hence the null hypothesis rejected and alternative hypothesis accepted. It means that, the pretest academic achievement and intelligence scores towards multimedia approach of girl students of secondary schools in Geography are dependent on each other.
- A significant and positive relationship was observed between posttest academic achievement and intelligence scores of girl students towards multimedia approach in Geography ($r=0.3739$, $p<0.05$) at 0.05% level of significance. Hence the null hypothesis is rejected and alternative hypothesis is accepted. It can be concluded that, the posttest academic achievement and intelligence scores of girl students towards multimedia approach in Geography are dependent on each other.
- A significant and positive relationship was observed between delayed test academic achievement scores and intelligence scores of girl students towards multimedia approach in Geography ($r=0.4206$, $p<0.05$) at 0.05% level of significance. Hence the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the delayed test academic achievement scores and intelligence scores of girl students towards multimedia approach in Geography are dependent on each other.

IV. DISCUSSION

The results of the study indicates that the pre-test academic achievement and intelligence scores towards multimedia approach of students and delayed test academic achievement scores and intelligence scores towards multimedia approach of students in geography are dependent on each other. But the post-test academic achievement and intelligence scores towards multimedia approach of students in geography are independent on each other.

In respect of control group, the pre-test academic achievement and intelligence scores towards multimedia approach of students and the delayed test academic scores and intelligence scores towards multimedia approach of students in geography are dependent on each other. But the post-test academic achievement scores and intelligence towards multimedia approach of students in geography are independent on each other.

In respect of experimental group, pre-test academic achievement and intelligence scores towards multimedia approach of students in geography are dependent on each other. But the post-test academic achievement and intelligence scores towards multimedia approach of students and the delayed test academic achievement scores towards multimedia approach of students in geography are independent on each other.

In respect of boy students, the pre-test academic achievement and intelligence scores towards multimedia approach in geography are dependent on each other. Whereas, the post test academic achievement and intelligence scores towards multimedia approach and the delayed test academic achievement scores and intelligence scores towards multimedia approach in geography are independent on each other.

In respect of girl students, the pre-test academic achievement and intelligence scores towards multimedia approach, the post test academic achievement and intelligence scores towards multimedia approach and the delayed test academic achievement scores and intelligence scores towards multimedia approach in geography are dependent on each other.

V. CONCLUSION

In conclusion, investigator would like to State that the modern world is the technological age. The technology has embraced the all the spheres of the life of human beings. The field of education is also not an exception and very important for the enhancement of intelligence, skills and manpower of students. Therefore, the teachers have to make use of multimedia in their day-to-day teaching process, in-order to enable the students to be Human Resources of the country and who will play an important role in the development and progress of the country in future, as they are the future citizens of India.

REFERENCES

- [1] Leowill Menezes, A.C., and Caslielino, Annie Dimple (2016) 'Effect of multimedia on developing self-directed learning and achievement among secondary pupils', New Delhi : EduTrack journal, Vol. 15(16), Pp. 38.
- [2] N.C.E.R.T (2005) 'National Curriculum Framework -2005', New Delhi: NCERT.
- [3] Ramesh Chandra (2005) 'Impact of media and echnology in Education', New Delhi: Kalpza Publication, Pp. 1, 48 and 49.