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EFFECT OF MULTIMEDIA ON ACHIEVEMENT IN SOCIAL SCIENCE IN RELATION TO ATTITUDE TOWARDS ICT AT SECONDARY SCHOOL LEVEL

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ABSTRACT

The main objective of the present study was to assess the effect of multimedia on achievement in social science in relation to attitude towards ICT at secondary school level. The experimental procedure was executed by employing pre-test and post-test with respect to group i.e. control group and experimental group. A sample of 100 students of IX class was taken from secondary school level. The experimental design was used. Experimental group was taught social science with multimedia; whereas the control group was taught social science through conventional methods. Achievement test in social science and attitude towards ICT was used as a research tool. The data was analyzed with the help of statistics. The results of the data revealed that multimedia significantly enhanced the achievement in social science of IX class students as compared to those taught with conventional methods. There is a significant difference in the effect of multimedia on achievement in social science of IX class students. On the other hand, there is no significant interaction between multimedia and attitude towards ICT on achievement in social science of IX class students. It can be concluded that multimedia improvement achievement in social science was significantly higher in comparison to conventional strategy. Multimedia motivates the students towards learning.

Keywords: *Multimedia, Information and Communication Technology, Secondary School Students.*

Introduction

Children are growing up in a world continuously besieged by visual stimuli coming from devices such as television, videos and many more. Using audio-visual materials in the classroom is nothing new. Since filmstrips were first studied during World War II as a training tool for soldiers (Hovland, Lumsdaine and Sheffield, 1949), educators have recognized the power of audio-visual materials to capture the attention of learners, increase their motivation and enhance their learning experience. Both the content and the technology have developed considerably since that time, increasing the availability and the value of audio visual materials in classrooms. Content has developed from instructional television of the 1950s and 1960s, which allowed replay of taped lectures, through educational television, intended to complement classroom instruction rather than compete with it (Corporation for Public Broadcast 2004) to educational standards based videos designed specifically as supplement classroom tools. Delivery technologies have also advanced, from filmstrips to cable television, to the versatility of VCRs, DVDs and laserdisc. Finally, with the advent of digital technology, the field is evolving to newer and ever-greater potentials of adaptability in delivery. The use of educational video and television in classrooms has risen steadily over the past 20 to 30 years, according to a series of studies conducted by the corporation for public broadcasting. These surveys measured both patterns of use and teacher attitudes and experiences for outcomes. Not only is this technology widely used, but it is also highly valued as a means of teaching more effectively and creatively (Corporation for Public Broadcasting, 1997).

Multimedia is a term that was coined by the advertising industry to mean buying ads on TV, Radio, and outdoor and Print Media. It was originally picked up by the personal computer industry to mean a computer that could display text in sixteen colors and had a sound card. Multimedia means the

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combined use of several media such as motion pictures, slides and music. Multimedia has entered the mainstream because of its attention holding and effectiveness. Some years ago the term multimedia referred to a room having slide projectors, overhead projectors, tape decks and movie projectors. Multimedia presentations were hard to put together and even harder to run. But the computer has changed all of that. It is now easier to make multimedia presentations on the computer and it doesn't need any special skills. Anybody who is familiar with the computer can create reasonably good multimedia presentations. In education, interactive multimedia programs allow 00you to study and progress at your own pace and branch into areas of interest when you want to.

The use of videodisks in classroom instruction is increasing every year and promises to revolutionize what will happen in the classroom of tomorrow (Semrau and Boyer, 1994). Video is a form of multimedia that conveys information through two simultaneous sensory channels: audio and visual. It often uses multiple presentation modes, such as verbal and pictorial representation in the case of on-screen print and closed captioning (Mayer, 2001). Video is another tool that has been on the rise in recent years, it is noted that 46 percent of teachers are using video in the classroom. Video technology is that technology that involves the recording and playing back of moving pictures and sound. Video technology also helps bridge the gap between the school's artificial environment and the outside world, bringing reality into the classroom. An example is the pioneer program developed by Jones and Taff (1986) to train vocational education students in banking operations. The instructors could not place the students as clerk interns because the banks required actual work experience for the position. To overcome this obstacle, the instructors added a camera to their video equipment and filmed an actual clerk working at a local bank so that students could analyze the tasks involved, the potential problems during a day's work and ways to solve the problems. Next, the instructors videotaped the students role-playing common bank-related tasks, such as the opening of the new accounts. The performance was then analyzed by the group with suggestions for improvement.

Objectives of the Study

- To study the effect of multimedia on achievement in social science of IX class students.
- To study the effect of multimedia and their interaction between treatment and attitude towards ICT on achievement in social science of IX class at secondary school level.

Hypotheses of the Study

- There is a significant difference in the effect of multimedia on achievement in social science of IX class students.
- There is no significant effect of multimedia and their interaction between treatment and attitude towards ICT on achievement in social science of IX class at secondary school level.

Delimitations

The present study was delimited to IX class secondary school students affiliated to the Central Board of Secondary Education in the subject of social science only.

Methodology

The experiment procedure was executed. One experimental group and one control group was formed. The multimedia group as an experimental group was taught social science with the supplement of multimedia, the control group was taught social science through conventional method.

Design

The present study was experimental in nature. The design was divided into three stages. The first stage involved pre-testing of two groups on achievement tests in social science and attitude towards ICT. The second stage involved treatment of 60 working days. The third stage involved post-testing of two groups after the treatment to determine the effect of treatment. In the present study, the treatment variable was multimedia and the dependent variable was achievement in social science. The study was designed on the basis of the experimental design. The study was designed on the basis of Pre-test Post-test Equivalent Control Group Design.

Sample

The present study was conducted on the IX class at secondary school level affiliated to C.B.S.E. One private school was selected to form the sample. The investigator put 50 students in the experimental group and 50 students in the control group. The total sample of 100 students was selected from IX class secondary school students. This study's selection process fell in the category of randomized sampling.

Research tools used

In this study the investigator used the following tools:

- Achievement test in Social Science developed by (Singh and Kaur, 2017). The split half reliability of the test was 0.81 and K-R Richardson formula was 0.78. The content validity was used.
- Attitude towards ICT developed by the investigator. The reliability of the test was 0.79. The content validity was used.

Results and Discussions

Analysis and interpretation of the data was calculated with the help of descriptive statistics namely mean, standard deviation and inferential statistics namely t-test and analysis of variance (one-way and two-way) was used to study the effect of multimedia on achievement in social science in relation to attitude towards ICT at secondary school level.

Analysis of data on interaction between treatment and attitude towards ICT on achievement in social science of IX class students at secondary school level

The objective was to study the interaction between treatment and attitude towards information and communication technology on achievement in social science of IX class students at secondary school level. There were two levels of treatment i.e. multimedia and conventional method. There were two levels of attitude towards information and communication technology namely, more favorable and less favorable. The data were analyzed with help of 2 X 2 factorial design of analysis of variance. The results are given in table 1:

Table 1: Summary of Analysis of Variance for the interaction between treatment and attitude towards ICT on achievement in social science of IX class students at secondary school level

Source	Sum of Squares	df	Mean Square	F-value
Treatment	2798.23	1	2798.23	49.93**
Attitude Towards ICT	2.74	1	2.74	0.04
Treatment * Attitude Towards ICT	36.15	1	36.15	0.64
Error	5379.59	96	56.03	
Total	157269.00	100		

*** pd"0.01.*

Effect of treatment on achievement in social science

From table 1, it indicates that the F-value for the effect of treatment on achievement in social science of IX class students is 49.93 which is significant at 0.01 level of significance. It means, there is significant difference in mean scores of achievement in social science of IX class students of experimental and control group i.e. students taught social science through multimedia and those taught the same topics through conventional methods. Thus, the hypothesis there is a significant difference in mean scores of achievement in social science of multimedia group and conventional group is accepted. In other words, multimedia was found to improve achievement in social science significantly higher in comparison to conventional methods.

Effect of attitude towards ICT on achievement in social science

Table 1 reveals that the F-value for the main effect of attitude towards information and

communication technology on achievement in social science turned out to be 0.04 which is not significant even at 0.05 level. It indicates that there was no significant difference of the mean scores of achievement in social science of more favorable and less favorable. In this context, the null hypothesis that there is no significant difference of attitude towards information and communication technology on achievement in social science of students of IX class is accepted. It can be said that more favorable and less favorable do not differ significantly on achievement in social science.

Effect of interaction between treatment and attitude towards ICT on achievement in social science

It may be seen from table 1 that the F-value for interaction between treatment and attitude towards information and communication technology on achievement in social science of IX class students turned out to be 0.64 which is not significant even at 0.05 level. It indicates that there was no significant interaction effect of treatment and attitude towards information and communication technology on achievement in social science of IX class students. Thus, the null hypothesis that there is no significant effect of interaction between treatment and attitude towards information and communication technology is accepted. It can be concluded that attitude towards information and communication technology may not be kept in mind while selecting the strategy of teaching social science.

The table 2 shows the mean scores of achievement in social science across the two levels i.e. more favorable and less favorable of attitude towards ICT of IX class students at secondary school level

Table 2: Mean scores of achievement in social science across the two levels of attitude towards ICT of IX class students at secondary school level

Levels of Attitude towards ICT	N	Mean	SD	t-value
More Favorable	52	38.76	8.60	0.18
Less Favorable	48	38.43	9.69	

It may be observed from table 2 that the mean scores of more favorable and less favorable attitudes towards information and communication technology came out 38.76 and 38.43 respectively. The SD of more favorable and less favorable attitudes towards information and communication technology came out 8.60 and 9.69 respectively. The t-value testing the significance of mean difference across more favorable and less favorable of attitude towards information and communication technology came out 0.18 which is not significant at 0.05 level showing that there is no significant difference in mean of achievement in social science of IX class students across more favorable and less favorable of attitude towards information and communication technology.

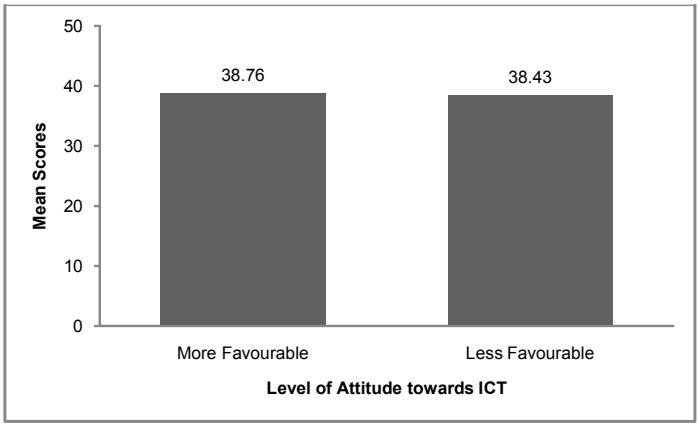

Figure 1: Mean scores of achievement in social science across the two levels of attitude towards ICT of IX class students secondary school level

The table 3 shows the mean scores of achievement in social science scores of IX class students in experimental and group across more favorable and less favorable attitudes towards information and communication technology.

Table 3: Mean scores of achievement in social science IX class students for Treatment X Attitude towards ICT at secondary school level

Levels of Attitude towards ICT	Group	N	Mean	SD	t-value
More Favorable	Experimental Group	26	43.46	8.29	4.66**
	Control Group	26	34.07	6.03	
Less Favorable	Experimental Group	24	44.33	6.55	5.28**
	Control Group	24	32.54	8.74	

*** pd"0.01.*

The table 3 shows the t-values testing the significance of mean difference in the mean scores of achievement in social science of IX class students with more favorable in experimental and control groups. It may be noted from table 3 that the mean scores of more favorable in experimental and control groups are 43.46 and 34.07 respectively. The SD of more favorable in experimental and control groups are 8.29 and 6.03 respectively. The t-value testing the significance of mean difference of achievement in social science of a more favorable level of attitude towards information and communication technology in experimental and control groups came out to be 4.66 which is significant at 0.01 level.

It may be observed from table 3 shows that the t-values testing the significance of mean difference in the mean scores of achievement in social science of IX class students are less favorable in experimental and control groups. It may be noted from table 3 that the mean scores of less favorable in experimental and control groups are 44.33 and 32.54 respectively. The SD of less favorable in experimental and control group are 6.55 and 8.74 respectively. The t-value testing the significance of mean difference of achievement in social science of less favorable level of attitude towards information and communication technology in experimental and control group came out to be 5.28 which is significant at 0.01 level.

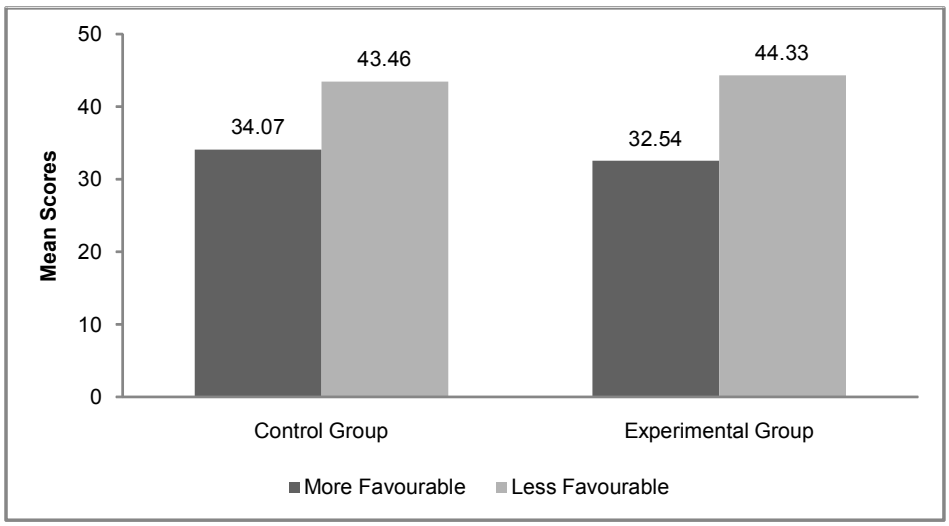

Figure 2: Mean scores of achievement in social science IX class students for Treatment X Attitude towards ICT at secondary school level

Conclusion

The results of the present study revealed that multimedia approaches enhance the achievement of the students in social science subjects as compared to conventional approaches. The achievement in social science with multimedia is significantly higher than the conventional approach. These findings of the study are supported by the previous studies, where the student's achievement is better with the use of multimedia (Aklnoso, 2018: Indira and Dhanalakshmi, 2018:Akinbadewa and Sofowora 2020). The findings of the study revealed that the students who taught social science through multimedia learned more than those who taught through conventional strategy of teaching. The present study revealed that there is no significant effect of multimedia in relation to attitude towards ICT at secondary school level. There is no significant interaction between multimedia and attitude towards information and communication technology at secondary school level. It may be concluded that attitude towards ICT may be not kept in mind while selecting the teaching strategy.

Educational Implications

Multimedia strategies are intended to help students to perform better in their academic achievement and also enhancing the thinking skills among the students and can determine for themselves how to improve. This study is significant for the curriculum framers as it reveals that multimedia should be part of academic curriculum so that teachers and students can efficiently learn computer skills. Promotions and increments should be offered to the teachers who are efficient in computer skills and develop the multimedia for teaching-learning process.

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