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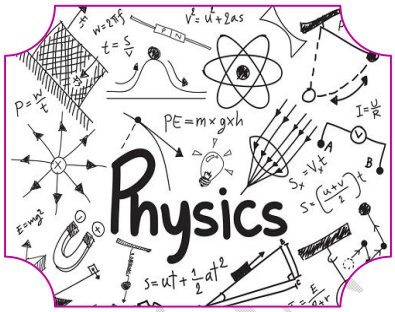
EFFECTIVENESS OF MULTIMEDIA TEACHING TO DEVELOP STUDY HABITS IN PHYSICS AT HIGHER SECONDARY STUDENTS



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ABSTRACT

The present study focussed on find out the effectiveness of multimedia teaching in physics at higher secondary level. Pre-test and post-test two group experimental design was used. The students of control group were taught by traditional lecture method. The students of experimental group were taught through multimedia method. The sample consisted of 20 students as control group and 20 students of experimental group. Achievement Test in Physics was conducted by the investigator. Data was analysed by t-test. Results showed that there is significant difference between pre-test and post-test performance for the experimental group among higher secondary school students in their study habits, attitude and interest towards using multimedia technology in learning physics of students.

KEYWORDS: *Multimedia Teaching, Study Habits, Higher Secondary Students.*

INTRODUCTION

Multimedia teaching embraces the use of animation and cartoon style for its effective delivery. Multimedia approach can be used in teaching basic science subjects like Biology, Chemistry, Physics and Mathematics. Multimedia involves the use of two or more different types of animated instructional media in a presentation of the view, animated teaching involving the use of Video Compact Disc (VCD) & Digital Video Disc (DVD), Animation teaching could be in form of lesson presentation, in that, still pictures; text, graphics, motion picture, background sound as well as some narrations are synchronized or combined at the same time in order to enhance learners' understanding of concepts. It also includes the use of interactive elements such as graphics, text, video, sound and cartoon teaching .On the other hand, since animation is composed of several pictures displayed in sequence and frame which is available for a short period of time. Affirmed that processing animated information imposes higher cognitive load due to the temporal limits of its working memory Pictures and animations help bring to life scientific principles, and multimedia allows students to take a more active role in learning.

According to the use of audio-visual aids in sciences has been found to be an effectiveway of communicating ideas and concepts to students. Literature has also established thataudio-visual-aided instruction has greatly improved the performance of students in science especially those with special needs and slow learners. However, some teachersare not flexible with the use of multimedia and audio-visual aids when teaching physics, chemistry, basic sciences, technology and computer science. Some teachers find it quitecomplex to use audio-visual aids to complement the traditional lecture method while otherssee the use of multimedia as waste of time. Animated teaching is an effective instructionalmedium which the teacher can use to deliver learning experiences to science students. Thispaper therefore examines the effect of multimedia teaching on physics student's academic performance.

NEED & SIGNIFICANCE OF THE STUDY

Multimedia technologies and applications are probably one of the most exciting innovations in the age of information evolution. Multimedia has the potential to create high quality learning environments, with the capability of creating a more realistic learning context through its different media. It also helps allowing a learner to take better control of the classroom especially when the class size is large. Multimedia has the potential to create high quality learning environments. With the capability of creating a more realistic learning context through its different media and allowing a learner to take control, interactive multimedia can provide an effective learning environment to different kinds of learners (Margie & Liu, 1996). Science and technology are of great importance in today's world. Physics has got as honoured place among the science. The advancement of technology has made a significant impact on the evolvement of teaching methods from traditional face-to-face teaching to Computer-Based Learning (CBL) or e-learning systems in all levels of education.Modern education and communication environments can offer alternative ways in the learning process. Multimedia has been widely used in educational technologies. It is also expected that future will see more of the utilization of such tools in education. Use of interactive multimedia in the teaching process is a growing phenomenon. It plays a very important role in assisting students in learning processes. Therefore, it can be concluded that the Multimedia enhance and enable students to learn in a more effective way.

OBJECTIVES

- To prepare multimedia programme for teaching concepts of physics at higher secondary level.
- To find out whether there is significant difference between pre-test and post-test score of medium of instructions with respect to attitude, interest, study habit and academic achievement in physics.

HYPOTHESES

1. There is no significant difference between pre-test and post-test performance for the experimental group among higher secondary school students in their study habits, attitude and interest towards using multimedia technology in learning physics of Tamil medium students.
2. There is no significant difference between pre-test and post-test performance for the experimental group among higher secondary school students in their study habits, attitude and interest towards using multimedia technology in learning physics of English medium students.

METHODOLOGY

The experimental method was adopted for this study. The students of control group were taught by traditional method. The students of experimental group were taught by multimedia teaching method. Before experimentation, the investigator conducted achievement test in physics to both experimental & control group and found no significant difference in their mean scores. After the treatment the post test was administered to both the groups. The collected data was subjected to statistical analysis and the results obtained were interpreted. The sample of the study consists of 40 students consisting of 20 for control group and 20 for experimental group of the eleventh standard students. Multimedia programme was designed to teach the concepts in the subject Physics of eleventh standard students. An achievement test was constructed and validated by the investigator under the supervision of guide. Attitude, interest and study habits tool was prepared by the investigator. The tool was validated by conducting a pilot study on 20 students. At first the questionnaire consisted of 40 items. The validated questionnaire used for the final study consisted of 20 items only. The same question paper was considered for the control group and experimental group.

ANALYSIS OF DATA

Table 1: Mean, SD, and *t*-value of Pre-test and Post-test Performance for the Experimental Group in their Study Habits, Attitude and Interest towards Using Multimedia Technology in Learning Physics of Tamil Medium Students

Variable	Experimental Group	Mean	SD	*t*-value	*P*-value
Study Habits	Pre-test	12.50	3.616	19.16**	.000
	Post-test	21.60	1.985		
Attitude	Pre-test	10.35	2.704	10.603**	.000
	Post-test	13.38	1.390		
Interest	Pre-test	13.65	3.255	11.619**	.000
	Post-test	18.15	1.252		

**Significant at 0.1 level

From Table-1, the calculated pre-test mean score for the experimental group on study habits is 12.50 and the post-test mean score is 21.60. The calculated *t*-value 19.16 is significant at 0.01 level. Hence, there is significant difference between pre-test and post-test performance of higher secondary school students.

From Table-1, the calculated pre-test mean score for the experimental group on attitude is 10.35 and the post-test mean score is 13.38. The calculated *t*-value 10.603 is significant at 0.01 level. Hence, there is significant difference between pre-test and post-test performance of higher secondary school students.

From Table-1, the calculated pre-test mean score for the experimental group on interest is 13.65 and the post-test mean score is 18.15. The calculated *t*-value 11.619 is significant at 0.01 level. Hence, there is significant difference between pre-test and post-test performance of higher secondary school students. Further, it is inferred from the finding, the post-test mean score is higher than the pre-test mean score for the experimental group in their study habits, attitude and interest towards using multimedia technology in learning physics of Tamil medium students.

Table 2: Mean, SD, and *t*-value of Pre-test and Post-test Performance for the Experimental Group in their Study Habits, Attitude and Interest towards Using Multimedia Technology in Learning Physics of English Medium Students

Variable	Experimental Group	Mean	SD	*t*-value	*P*-value
Study Habits	Pre-test	11.80	3.496	18.477**	.000
	Post-test	20.91	2.369		
Attitude	Pre-test	10.31	2.139	9.261**	.000
	Post-test	13.20	.964		
Interest	Pre-test	13.26	2.417	14.783**	.000
	Post-test	17.51	1.541		

**Significant at 0.1 level

From Table-2, the calculated pre-test mean score for the experimental group on study habits is 11.80 and the post-test mean score is 20.91. The calculated *t*-value 18.477 is significant at 0.01 level. Hence, there is significant difference between pre-test and post-test performance of higher secondary school students.

From Table-2, the calculated pre-test mean score for the experimental group on attitude is 10.31 and the post-test mean score is 13.20. The calculated *t*-value 9.261 is significant at 0.01 level. Hence, there is significant difference between pre-test and post-test performance of higher secondary school students.

From Table-2, the calculated pre-test mean score for the experimental group on interest is 13.26 and the post-test mean score is 17.51. The calculated *t*-value 14.783 is significant at 0.01 level. Hence, there is

significant difference between pre-test and post-test performance of higher secondary school students. Further, it is inferred from the finding, the post-test mean score is higher than the pre-test mean score for the experimental group in their study habits, attitude and interest towards using multimedia technology in learning physics of English medium.

FINDINGS

- There is significant difference between pre-test and post-test performance for the experimental group among higher secondary school students in their study habits, attitude and interest towards using multimedia technology in learning physics of Tamil and English medium students.

CONCLUSION

The goal of the study was to examine the effectiveness of multimedia teaching in physics concepts among eleventh standard students. Hence from this study we find that the technology can be used as replicate traditional forms of teaching. This is used in the classroom are beneficial as students score more marks when compared with the students who were taught by traditional method. Multimedia technology is fairly a new area & its full potential is yet to be realized in the field of education.The investigator in this study found a significant improvement in the achievement of students after they were exposed to multimedia teaching.

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