

Effectiveness Of Using Video Presentation In Teaching Biology Over Conventional Lecture Method Among Ninth Standard Students Of Matriculation Schools In Coimbatore District

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Abstract: *This study investigated the effectiveness of using video presentation in teaching the Biology topic 'The Circulatory system- Structure and functioning of Heart' over Conventional Lecture method among Ninth standard students of Matriculation schools in Coimbatore district, Tamil Nadu. For this study, the Researcher selected True Experimental design by conducting both Pre test and Post test for the Experimental group and the Control group. Achievement test with pupil's personal data sheet was the tool used in this study. The standardized question paper was used for both Pretest and Post test Achievement of both Control group and Experimental group. Data was collected from 80 students out of which 40 from Section 'A' which constituted Control group were taught by Lecture method using a chart and the other 40 from Section 'B' which constituted Experimental group were taught by using a Video presentation prepared by the researcher.. The data collected from the sample was analyzed by appropriate statistical techniques such as Mean, Standard Deviation and 't' test using SPSS. The study revealed that there was a significant difference in the post test scores of the students of Experimental group taught using Video presentation when compared to the students of Control group who were taught using Conventional lecture method.*

Keywords: *Video presentation, Conventional lecture, t test, Experimental research, Biology, Achievement test.*

I. INTRODUCTION

Education is very important and without education no one can lead a good life. Teaching and learning are the important elements in education. The teacher use different methods and materials to teach their students and helps in their effective learning. With the passage of time, different methods and techniques have entered in the field of education and teacher use different kinds of aids to make effective teaching. Teaching aids arouse the interest of learners and help the teachers to explain the concepts easily. Audio visual aids are important in education system. Audio visual aids are those devices which are used in classrooms to encourage teaching learning process and make it easier and interesting. Audio - visual aids are the best tool for making teaching effective and the best dissemination of knowledge. So, there is no doubt that

technical devices have greater impact and dynamic informative system.

In practice, in the classrooms teachers concentrate on completing the syllabus within a stipulated time and force the learners to memorize the content without intellectual involvement and cognitive processing. This inculcation of Science instruction fails to inculcate scientific temper and skills in the learners and fails to develop academic excellence and competence and to fulfill the objectives of teaching science education. This shortcoming may be overcome by the greater application of Educational technology. Audio-visual aids are good means of communicating with students and facilitate or assist the regular and traditional teaching session. They help in maintaining and retaining the interest of students almost till the very end of the classroom session. This study investigates if the use of video presentations in the classroom

for teaching physiology topics would improve the performance of the students.

II. REVIEW OF RELATED LITERATURE

Educational technology refers to the use of any technology in classroom which helps in increasing the pace of learning and results in helping the teacher to teach less and the learner to learn more (Singh, Sharma, Upadhy, 2008). Audio-visual aids are tool or mechanics used to facilitate the learning experience of the individual and to make it more realistic and dynamic. (Kinder, 1959). Use of audio-visual aids is preferred as they are considered as 85% of whole teaching and learning (Jadal, 2011). They keep the individual learner focused on what is being taught by the teacher in the classroom session. It helps in comprehension by bringing the child in a direct contact with the concept and how it actually works in real life situations (Kinder, 1959). Student is more attentive, motivated and interested as compared to that classroom session that is in function without the use of audio-visual aids (Sampath, Pannneerselvam and Santhan, 1998). Mohan, L et al. (2010) opine in a study at India that 85% of the students are in favor of teaching methods that employ audiovisual aids as compared to typical lectures delivered without the use of audio-visual aid. There is a positive relationship between academic performances of the students with availability and use of instructional material or audio-visual aids in schools. Jamison et al. (1981) as cited in Dahar & Faize (2011) states that physical facilities and availability of instructional material along with the level of teacher education, all collectively develops the quality classroom and quality learning that predicts or forecasts the students' achievements.

NEED FOR THE STUDY

Using of audio-visual aids seems very essential in today's education, as individuals of 21st century belong to virtual age brackets. They experience video games, online learning and computerized programming from a variety of places such as classrooms, Internet Cafes, and their homes. To contribute to this aspect of learning, teachers incorporate audio-visual aids such as models, video presentation, and power point slideshow in the classroom sessions. We have to effectively make use of these available technologies and make teaching more informative and interesting. Normal classroom instruction in place does not provide opportunities for the development of student's potential abilities. Audio-visual aids make a lesson or a lecture more interesting as well as a memorable experience not only for the students but also for the teachers. They play a vital role in focusing the attention of a student towards the teacher or the topic. The five senses of a human being become the doorway for effective learning; seeing, hearing and touching helps grab information more effectively and hence gain knowledge.

OBJECTIVES OF THE STUDY

The objectives of the present study are as follows:

- ✓ To present a video for teaching Biology topic 'The Circulatory system-Structure and Functioning of Heart' among the Ninth Standard students in matriculation schools.
- ✓ To understand whether there is any significant difference between the Pre-test of control group and Experimental group.
- ✓ To decipher whether there is any significant difference between the Pre-tests and Post-tests of control group.
- ✓ To find out whether there is any significant difference between the Pre-tests and Post- tests of Experimental group.
- ✓ To understand whether there is any significant difference between the Post tests of Control group and Experimental group.
- ✓ To analyze the effectiveness of using video presentation in teaching Biology topic 'The Circulatory system-Structure and functioning of Heart' over conventional lecture method among the Ninth Standard students of Matriculation schools in Coimbatore District.

III. METHODOLOGY

For this study, the researcher selected True experimental design by conducting both Pre test and Post test for the control group and the experimental group. Achievement test with pupil's personal data sheet was the tool used in this study for data collection. This study has been undertaken in matriculation schools of rural areas of Coimbatore district.

The pilot study was conducted in a matriculation school at Karumathampati of Coimbatore district, Tamil Nadu. In order to establish the reliability and validity of the achievement test, the test was administered at random with 40 students of Ninth Standard, among which 25 were males and 15 were females. The achievement test for pilot study had 45 objective questions based on the topic 'The Circulatory system-Structure and Functioning of Heart' and each carried one mark. The time allotted was 40 minutes. Through pilot study, 15 questions that are too easy or too difficult were eliminated and 30 average level questions were selected for the final study.

The final study was conducted in a matriculation school at Neelambur of Coimbatore district, Tamil Nadu. 80 students from Ninth Standard were taken at random as sample set for the final study, from two sections – Section A and Section B. 40 students who formed the control Group were grouped under Section A and 40 students who formed the experimental Group were grouped under Section B, for convenience of the study. All the students who were considered as the sample set were of the same age group and the class was a combination of both boys and girls, since the school selected was a co-educational school.

Before commencing the experiment, Pretest was administered for both control and experimental group by conducting achievement test based on the Biology topic 'The Circulatory system-Structure and Functioning of Heart'. The Pretest achievement test assessed the previous knowledge of the pupils. The test items were all objective type. The time

duration was 30 minutes and carried a maximum weightage of 30 marks.

After administering Pre test for both groups, control group students were told to sit in their classrooms. The researcher taught the lesson using a chart of structure of heart. The lesson plan was prepared by the researcher before she entered the class to teach the lesson. The time duration for the lesson was 40 minutes. All the students in the experimental group were taken to another classroom. The researcher taught the lesson along with the video presentation on ‘The Circulatory system-Structure and Functioning of Heart’ prepared by her using Easy video maker software. The time duration for the lesson was 40 minutes.

Post test was administered to both the groups- control group and experimental group, immediately after completing the teaching strategies. The same Pretest question paper was used for the Post test also. The Post test achievement test assessed the final behavior of the students where the students have a better understanding and knowledge of the subject.

VI. RESULTS AND DISCUSSION

HYPOTHESIS 1

There is no significant difference between the Pre-test of control group and experimental group on academic achievement in the Biology topic “The Circulatory system-Structure and functioning of Heart”

INTERPRETATION

GROUP	TEST	N	M	SD	t-VALUE	REMARKS
Control group	Pretest	40	32.00	9.749	-1.660	Not Significant at 0.05 level
Experimental group	Pretest	40	35.50	9.095		

Table 1: Scores of Pretest of control and experimental group on academic achievement in biology topic

To test the hypothesis, the level of significance was fixed at 0.05 with the theoretical value 1.99 at df 78 (df = N-2). Table 1 shows the mean, standard deviation and t-test value of Pretest scores of academic achievement in Biology topic with respect to control and experimental group. From Table 1, the table value 1.99 is greater than the calculated value -1.660. So, the null hypothesis is accepted.

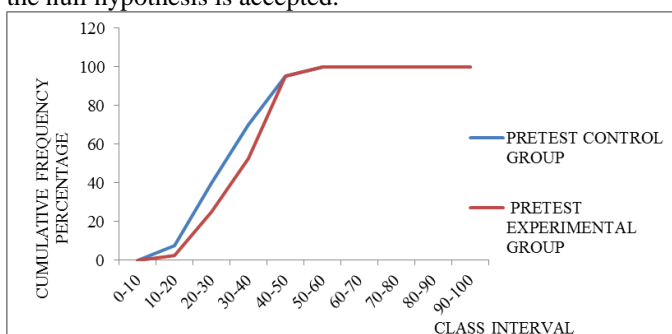


Figure 1: Ogive representation of pretest scores of Control and Experimental group

Refer Figure 1 for the graphical representation showing the percentage of cumulative frequency distribution scores of Pre test of control and experimental group of Ninth Standard students. The difference in Pretest scores are shown in this graph. There is not much difference between the curves of the Pretest of control and experimental group.

HYPOTHESIS 2

There is no significant difference between the pre-test and post test of Control group on academic achievement in Biology topic “The Circulatory system-Structure and functioning of Heart”.

INTERPRETATION

GROUP	TEST	N	M	SD	t-VALUE	REMARKS
Control group	Pretest	40	32.00	9.749	-10.937	Significant at 0.05 level
	Post test	40	55.17	15.153		

Table 2: Scores of pretest and post test of control group

To test the hypothesis, the level of significance was fixed at 0.05 with the theoretical value 1.99 at df 78 (df = N-2). Table 2 shows the mean, standard deviation and t-test value of pretest and post test scores of control group on academic achievement in Biology topic. From the Table 2, the table value 1.99 is less than the calculated value -10.937. So, the null hypothesis is rejected and alternative hypothesis is accepted.

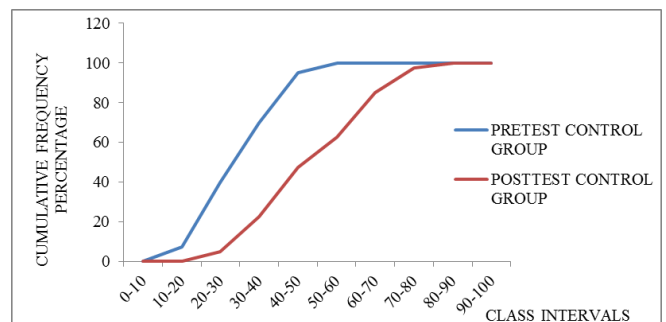


Figure 2: Ogive representation of pretest and post test scores of control group

Figure 2 shows the graphical of the percentage of cumulative frequency distribution scores of Pre test and Post test of control group of Ninth Standard students. The difference between the Pre test and Post test scores are shown in the above graph. The difference in the achievement of Biology topic is shown by the distance separating the curves at certain level. In Figure 2, the curve of Post test score shows the better performance in the achievement test which is due to conventional lecture method in Biology.

HYPOTHESIS 3

There is no significant difference between the Pre test and Post test scores of experimental group on academic achievement in Biology topic “The Circulatory system-Structure and functioning of Heart”.

INTERPRETATION

GROUP	TEST	N	M	SD	t-VALUE	REMARKS
Experimental Group	Pre test	40	35.50	9.095	-16.397	Significant at 0.05 level
	Post test	40	67.95	11.989		

Table 3: Scores of pre test and post test of experimental group

To test the hypothesis, the level of significance was fixed at 0.05 with the theoretical value 1.99 at df 78 (df = N-2). Table 3 shows the mean, standard deviation and t-test value of Pre test and Post test scores of experimental group on academic achievement in Biology topic. From Table 3, the table value 1.99 is less than the calculated value -16.397. So, the null hypothesis is rejected and alternative hypothesis is accepted.

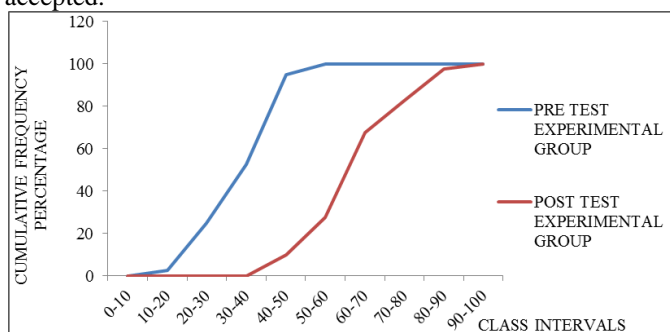


Figure 3: Ogive representing pre test and post test scores of experimental group

Figure 3 is the graphical representation of the percentage of cumulative frequency distribution scores of Pre test and Post test of experimental group of Ninth Standard students. The differences in Pre test and Post test scores are shown in this graph. The differences in the academic achievement test in Biology topic is shown by the distance separating the curves in certain level. In this figure, the curve of Post test scores shows the better performance in the achievement test due to Video presentation, an Audio visual method on Biology topic ‘The Circulatory system-Structure and Functioning of Heart’.

HYPOTHESIS 4

There is no significant difference between the Post test scores of control group and experimental group on academic achievement in Biology topic ‘The Circulatory system-Structure and functioning of Heart’.

INTERPRETATION

To test the hypothesis, the level of significance was fixed at 0.05 with the theoretical value 1.99 at df 78 (df = N-2). Table 4 below shows the mean, standard deviation and t-test value of Post test scores of academic achievement in Biology topic with respect to control and experimental group. From Table 4, the table value 1.99 is less than the calculated ‘t’

value -4.184 So the null hypothesis is rejected and an alternative hypothesis is accepted.

GROUP	TEST	N	M	SD	t-VALUE	REMARKS
Control group	Post test	40	55.17	15.153	-4.184	Significant at 0.05 level
Experimental group	Post test	40	67.95	11.989		

Table 4: Scores of Post test of control and experimental group

Figure 4 shows the graphical representation of the percentage of cumulative frequency distribution scores of Post test of control and experimental group of Ninth standard students. The differences in Post test scores are shown in the graph. There is difference between the curves of the Post test of control and experimental group

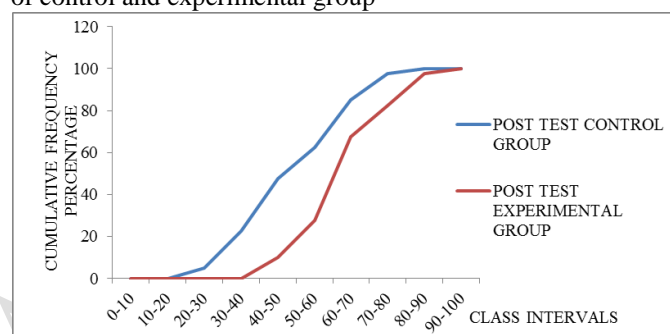


Figure 4: Ogive representing post test scores of Control and Experimental group

HYPOTHESIS 5

Method using video presentation as an audio visual aid is more effective than the conventional lecture method on the academic achievement in Biology topic.

From the Table 5, it is concluded that the method using video presentation as an Audio visual aid is more effective than the conventional lecture method. This is proved by the mean difference between the control and experimental group, which is 12.78 units.

SL.NO	GROUP	TEST	N	M
1.	Control group	Post test	40	55.17
2.	Experimental group	Post test	40	67.95

Table 5: Scores of Post tests of control and experimental group

The graphical representation shows the percentage of cumulative frequency distribution scores of Pre test and Post test of control and experimental group of Ninth Standard students. The differences in academic achievement in Biology topic is shown by the distance separating the curves at certain levels. The curves that represent the Pretest scores of control and experimental group are very close to each other. The curves of Post test scores show better performance in

academic achievement tests. The distance between the scores of experimental group is to be noted, in order to understand the high effectiveness of Video presentation in teaching Biology topic “The Circulatory system-Structure and Functioning of Heart”.

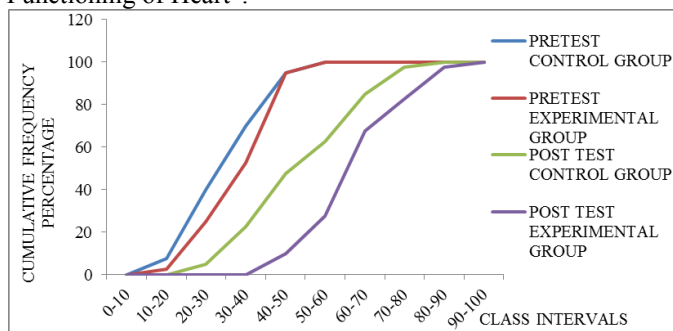


Figure 5: Ogive representing the Pre tests and Post tests scores of Control and Experimental group

VII. SCOPE FOR FUTURE STUDY

There is much scope for doing further studies on this topic.

- ✓ At present with the changing times, most of the schools are equipped with Audio visual aids. The study on the effectiveness of teaching Biology using Video presentation is an attempt to find out the students' level of learning, their subject knowledge and their retention power.
- ✓ This same study can be carried among other class students VII, VIII, X, XI, XII etc., where the students would surely welcome a change from their normal conventional teaching methods.
- ✓ This study can be extended further in teaching Cell Biology, Molecular Biology, Plant Physiology and other Animal Physiology topics.
- ✓ The present study can be done in other districts of Tamil Nadu and also in other states of India.
- ✓ Moreover, the study will help further to improve the quality of teaching as well as learning.

VIII. CONCLUSION

The results of the present study prove that teaching Biology through Video presentation is more effective than the traditional method. It is found that students score more marks when they are taught through practical method. Appropriate software, new technologies and modern Audio-visual aids like multimedia should be used to make the learning process effective as well as interesting. What videos could do is keep students engaged and paying attention. If students can pay attention and focus better in class, then videos could be a positive and useful teaching strategy. When students pay attention more, they can learn more. Therefore, it is inferred that Video presentation may be used in promoting a student's necessary skills.

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