

**EFFECT OF MULTIMEDIA TECHNIQUES OF TEACHING SCIENCE IN
IX STANDARD STUDENTS FOR DEVELOPING OF SKILLS AND
ACHIEVEMENT OF KNOWLEDGE IN SCIENCE**

VIRAJ MODI

Research Scholar

DBHPS, DHARWAD

Email: modivirajgkk@gmail.com

DR. A. L. PATIL

Principal

KSR College of Education Belgaum

Abstract:

The purpose of the study was to find the Effect of Multimedia Techniques of Teaching Science in IX Standard for Developing of Skills and Attitude towards of Science. The sample of the present study includes 100 students studying in IX standard were drawn using a stratified random sampling technique. The study revealed that, i) The result implies that the Multimedia Technique more effective than the Conventional method of teaching for the attainment of Skills in science; ii) The Multimedia Technique is more effective in the achievement of knowledge in science than the Conventional method of teaching.

Keywords : *Multimedia Technique, Developing Knowledge, Attitude towards science*

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VIRAJ MODI

DR. A. L. PATIL

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Introduction

Learning through Multimedia

For many, the typical classroom experience is a teacher imparting knowledge through lecture and presentation. This one-way communication tradition has resulted in the transmission of knowledge to the passive learners since the dawn of time. Yet, increasingly, it is being challenged. The present modern Educational technologies have the ability to go beyond this. One such method is Multimedia. Through multimedia, we can prompt the learner to contemplate information, perform tasks, refine thinking, and demonstrate understanding. Multiple modalities (visual, audio, and animation) and active learning make this possible.

Most traditional textbook approaches to teach a particular subject favor a linguistic or narrative approach. Such an approach will fail to reach those who may respond better to an artistic or naturalistic depiction of the topic. In addition, it also fails to develop those other neural connections and pathways and enhance those intelligences. This is where technology-based interactive approaches incorporating video and audio (in other words, multimedia) allow education and, in effect, learning to reach more students and provide more opportunities for active learning.

At its best, multimedia presents subjects/contents to students in a more memorable, interesting way than books or a single medium can. Multimedia addresses different learning strategies. Researchers have shown that students learn better and retain more when audio-visual aids are added to a lecture. And when they “learn by doing”, they retain up to 70% more than they do by simply listening to a lecture.

Multimedia makes learning more active. Active learning involves putting students in situations where they must read, speak, listen, contemplate, think deeply, write, and respond. Bonwell and Eison (1991) have defined the following attributes of active learning : students are involved in more than listening ; less emphasis is placed on transmitting information, and more emphasis is placed on developing students’ skills ; students are involved in higher-order thinking (e.g., analysis, synthesis, evaluation) ; students are engaged in activities (e.g., discussion, writing, kinesthetic activities) ; greater emphasis is placed on students’ explorations of their own attitudes.

Role of the Teacher in Multimedia Approach

The teacher has to make necessary modifications and adjustments if he has to adopt a Multimedia approach. His role would have a different connotation compared to the traditional role. The following suggestions would enable the teacher to adopt a Multimedia approach effectively:

- The teacher has to be aware of different media and their availability.
- The teacher should be physically competent to use and demonstrate the use of different media.
- The teacher should be skillful enough to make a judicious choice of media and be competent enough to mix them in an orderly manner.
- The teacher's role is that of a facilitator or manager of activities. He has to lead his students towards independent individualized learning.
- The teacher should provide the students with a rich learning experience so that they could link practice and theory and integrate them.

Need of the Study

According to Salinger(2004), "Multimedia content should be seen as a tool to improve the understanding, engagement, and motivation of learners; to test their understanding using novel assessment methodologies based on trial and improvement; simulations and manipulation of models". The didactic nature of multimedia seems to fulfill this condition as the learner while reading the didactic content builds an understanding and then the moral of the story reinforces that understanding. The term "didactic" refers to content such as self-instructional material, audio, and video that convey some moral, fact, or learning. Here learning objects differ from the traditional media in the sense that it can be simultaneously delivered, accessed and used with respect to time and pace, but digital resource that can be reused to support learning. The younger generation is smart and fast in all aspects. When technology is imparted in education means there will be hope to blast of new innovative achievements in instructional teaching. In this age of electronic media, computers and the internet are used to collate, store, and transmit millions of items of information in no time.

At the secondary level, the science education provides a gradual transition from environmental studies to elements of science and technology. During this stage, there is a need to take up innovative programs on science teaching in schools as there perceived the gap between recommendations of various commissions and committees and actual practice. A reform of science teaching should aim to comprehensively address all factors that affect the teaching-learning process. Science teaching in schools can be improved significantly with some informal activities including science meals, science clubs, and libraries. All these programs can make the classroom more participative, less authoritarian teachers and give children greater freedom and facilitate learning rather than dictate learning. The science education should enable the learner to know the facts and principles of science and its application, consistent

with the stage of cognitive development. It helps to acquire the skills and understand the methods and processes that lead to the generation and validation of scientific knowledge and to the development of a historical and developmental perspective of science. Science education also enables the learner to nurture the natural curiosity, aesthetic sense, and creativity in science and technology and cultivate scientific ‘temper’- objectivity , critical thinking, and freedom from fear and prejudice.

In this electronic era, we have a variety of resources starting from traditional media to present potential compute. Internet etc that are storehouses of multimedia and materials. Multimedia plays a vital role in day-to-day life at present as it is found to be useful and practical. It combines knowledge and pleasure, and light and sound with relevant visuals to be used with imagination ideas, artistic ability, professional experience, and expertise likewise, the investigator selects the study.

Objectives of the Study

1. To study the Multimedia technique and Conventional Method in Science of Secondary school students for development of Skills
2. To study the Multimedia technique and Conventional Method in Science of Secondary school students with respect to Attitude towards Science.

Hypotheses

1. The effect of Multimedia Technique (MMT) and Conventional Method in Science will be different for Secondary school Students in terms of the development of Attainment of skills.
2. The effect of Multimedia Technique (MMT) and Conventional Method will be different for Secondary school students with respect to Achievement of knowledge in Science.

Methodology

Multimedia Technique was used in the Experimental group and Conventional method in the Control group. After the treatment for four months, the Achievement test and Attitude scale were administered to the two groups.

Sample

A total of 100 students were taken as a sample from two sections of IX Standard students of Belgaum. One section was considered as an Experimental group and the other as a Control group. Achievement tests and the Attitude scale were administered prior to treatment to both the groups.

Tools

This section elucidates the tools used for the present study. The various tools used for the study are:

- I. Achievement Test
- II. Attitude Scale
- III. Multimedia Technique
- IV. Conventional Classroom Teaching

Statistical Techniques

The statistical techniques used here are descriptive statistics Mean and Standard Deviation and 't' test was used to find out the significance of the difference.

Analysis and Interpretation

Analysis of Difference between the Post Test Scores of Experimental Group and Control Group on Achievement of Knowledge in Science

The analysis of the difference between the post-test scores on the achievement of knowledge in the science of Experimental Group and Control Group was done. The post-test scores were subjected to statistical analysis and their Arithmetic Mean and Standard Deviation were calculated. The results of the significance of the difference between the Means of the post-test scores of the Experimental Group and Control Group are given in table -1.

Table-1

Significance of difference between post-test of Experimental Group and Control Group on the achievement of Knowledge in science

Test	Mean	SD	N	df	t	Level of significance
Girls	48.54	1.22	50	49	26.92*	P<0.01
Boys	34.94	3.35	50			

Post-test scores of the Experimental group and Control group are significant at 0.01 level.

The result implies that the Multimedia Technique is more effective in achievement of knowledge in science than the Conventional method of teaching.

Analysis of Difference between the Post-Test Scores of Experimental Group and Control Group on Attainment of Skills in Science

The analysis of the difference between the post-test scores on the achievement of skills in the science of Experimental Group and Control Group was done. The post-test scores were subjected to statistical analysis and their Arithmetic Mean and standard deviation were calculated. The result of significance of the difference between the means of the post-test scores of the Experimental Group

and Control Group is given in table 4.29.

Table-2

Significance of difference between post-test scores of Experimental Group and Control Group on the attainment of Skills in science

Test	Mean	SD	N	df	t	Level of significance
Girls	48.54	1.22	50	49	26.92*	P<0.01
Boys	34.96	3.35	50			

*Significant at 0.01 level

A paired sample 't' test revealed a significant difference in the post-test means attainment of Skills in science between Experimental Group and Control Group. The results given in table-2 indicate that the post-test Mean on the attainment of Skills in science for the Experimental Group (M = 48.55) is higher than the Control Group (M=34.96). The obtained 't' value of 14.88 is higher than the table value 2.58 at 0.01 level for df 49. So the difference between the post-test Means of Experimental Group and Control Group is significant at 0.01 level.

The result implies that the Multimedia Technique more effective than the conventional method of teaching for the attainment of Skills in science.

Discussion and Conclusion

The Multimedia Technique more effective than the conventional method of teaching for the attainment of Skills and achievement of knowledge in science.

Educational Implications

- The study has shown that MMT used for achieving Knowledge and Skills in science would help in the nurturing of scientific knowledge of students.
- In this study the various components of MMT used including charts, pictures, videos and different activities performed would enhance the science learning in a positive way.
- The study has revealed that achievement of Knowledge and Skills in science would help in the modification of Attitude towards science.
- Students would develop scientific values, gets opportunity to learn science in a fruitful way, the scope for doing practical work, thinking about future participation in science, develop self-concept in science, understand the importance of science and use science outside the school with this study.

- Study has shown that the greater Attitude towards science was developed among the students which would help to change their behavior and establish an interest to understand science in a better way.
- The positive effect of the multimedia approach on achievement leads to the following educational implications:-
 - a) In the present study, the multimedia approach was found far superior to the traditional approach of teaching in promoting the acquisition of both lower and higher-order objectives i.e. knowledge, understanding, and application. Hence, the multimedia approach can be effectively implemented in secondary schools to attain different objectives of teaching biology.
 - b) This approach can be effective for all the students with different learning abilities as individual differences can be overcome in learning through different media.
 - c) On an experimental basis, a multimedia approach can be adopted in some schools for all the subjects to improve school effectiveness.
 - d) This approach can be effective for all the students having different learning styles.

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