

A Study on Impact of Multimedia Approach Teaching –Learning Process

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Abstract

It is time's demand that science education should be provided to all kind of students of the country and no student should be deprived from the benefits of it. New methods and techniques in education are having an increasing effect on the traditional approach to teaching and learning, (Ranjana, 2014). In an effort to expand access to the vast majority of residents in developing countries; many tactics have been investigated, including the use of multimedia technologies. In order to examine how multimedia technologies have proven to be a real strategy for bridging the gap in the provision of unrestricted access to quality education and improved learner performance, this paper provides a systematic review of various multimedia approaches in the teaching and learning processes. . The review process entails conducting a thorough search of pertinent scientific literature, selecting pertinent studies using predetermined inclusion criteria, analysing the literature, and synthesising the results of the various studies that have looked into the use of multimedia in learning and teaching processes.

The review looks at a variety of multimedia case study reports, their limitations, areas of use, and methods of evaluation, technological components, and age groups that the tools are intended for. Additionally, directions for future research are given. Existing techniques were discovered to include multimedia elements including audio, video, animation, and 3-D in addition to text and photographs. The study came to the conclusion that the majority of multimedia solutions used for teaching and learning target the pedagogical content of the subject of interest and the solution's user audience, while the technologies and components built into the development of each multimedia approach are what make them successful when used on different target groups and subjects.

Keywords: Education, Multimedia approach,

Introduction

The investigator's primary task is to recollect, duplicate, and provide a summary of the findings from the earlier chapters. The investigator can also include his recommendations for additional research in this chapter's recommendations. This method increases the academic achievements of the learners and very helpful in independent learning, (K, 2014).

Enhancing student academic performance is one of education's key objectives. To address the issue of students' low success, alternative educational programmes or instructional strategies must be put into effect. The effectiveness of techniques clicks and proves itself only when both the stake holders i.e., (Bhushan, 2012) . The teacher and students try to get best out of it. This must be done while making an effort to create a learning environment and implement a teaching strategy that is appropriate for pupils. The use of the Multimedia Teaching Programme technique is strongly advised as one of the teaching methods in the current reform movement for biology. A multimedia teaching approach is an instructional strategy intended to support students' academic growth. It is one of the most cutting-edge methods in use by educators worldwide. For many of us, the lure of computers is a powerful one. However, many of us also refrain from using computers for fear of failure. We want to hone computer skills, but are scared to make the effort because we lack those very skills. (Shailendra Kumar Soni, 2016)

In the first step, Pre-test was conducted to check whether the groups were different before the manipulation starts. The intervention was administered to the students of experimental group over a period of 1 month with ten sessions in the week. In the course of entire study, the traditional methods of teaching were used control group (Chaudhary, 2007).

The current study aims to examine the efficacy of multimedia teaching programmes for biology instruction. By comparing the accomplishment levels of students in the XI grade in two groups (the experimental group and the control group) after

being taught five specifically chosen topics in biology, the study establishes the efficacy of the multimedia teaching strategy. The students, teachers, and educators are expected to profit from the findings of this study. The present study was designed with the importance of biology in mind. Considering that biology is one of the most important subjects in the school curriculum.

Educational Technology

The investigator's primary duty is to review, summaries, and repeat the results from the earlier chapters. The investigator's recommendations for additional investigations may also be included in this chapter's recommendations.

When we talk about technology in education, we're talking about the availability of hardware and software designed to work with that hardware. It generally assumes that technology has the ability to alter the way that people learn.

The main objective of educational technology is to make the teaching and learning process more effective and efficient. To this end, a systems approach is used.

Multimedia

The presentation of text, graphics, audio, and video while incorporating links and other tools that enable user interaction, creation, and communication is known as multimedia.

There are two forms of multimedia: linear and non-linear. In this work, the Non-linear category has been applied. The characteristics of multimedia include multimedia presentations, games, and simulations. Presentations using many media formats can be viewed live on stage, projected, broadcast, or played locally using a media player. Multimedia games and simulations can be played locally on an offline computer, on a gaming system, or with a simulator. They can also be played online with other players.

Role of Multimedia based Computer Animation Course Ware in Schools

The majority of multimedia animation software is made to make teaching and learning processes easier for both teachers and students. The aid of computer animation courseware makes it especially simple to comprehend scientific subjects. A biology student, for instance, likes and comprehends the parts and every aspect of the operation of the Van de Graaf Generator with great ease. When animated graphics are given to higher secondary biology and chemistry pupils with the use of computers, they similarly quickly grasp the challenging topics.

Multimedia - Its Applications

Advertising, art, education, entertainment, engineering, medical, math, business, and scientific research are just a few of the fields where multimedia is used.

In the field of education, multimedia is used to create reference books like encyclopedias as well as computer-based training courses (often referred to as CBT). Through a CBT, the user can browse through a collection of presentations, texts that discuss a specific subject, and related illustrations in various information formats. Combining education and entertainment, particularly multimedia entertainment, is referred to as "edutainment." The use of multimedia in the classroom can help students learn foreign languages, science subjects like biology, chemistry, and biology, as well as humanities courses like history, geography, music, and the arts.

Computer in Education

Computers in Education are revolutionary both in Teaching and Learning processes. Computers allow the development of interactive and individualised relations with the learner and no other technology has this potentiality except a human teacher. Uniqueness of computers lies in their informational capacity to present the learner a whole world in a capsule enabling the learner to interact directly with a domain of knowledge. Computers have brought a revolution in information technology-composing, communicating, processing, retrieving, preserving and destroying information. It is difficult to decide how to use computers because the technology keeps on changing and new studies induce the teachers to shift their properties for use of computers for the development of skills needed for national development, computers are used in education.

The interactive computer based instruction changes the traditional teacher based instruction. Computers can serve as effective, individualised teachers for students because of their systematic nature and capacity for multidimensionality.

Computer Assisted Instruction

An early attempt at computer-managed learning in school was the personally prescribed Instruction project, in which a computer was set up to offer daily quizzes and homework assignments. Teachers who were liberated from keeping records and making decisions on what and how students should study now serve as tutors, assisting the kids in getting the most out of their computer-required studies.

The use of the principles of programmed learning in applications has led to the development of computer assisted instruction (CAI). Games, simulations, problem-solving, drill and practice, and tutorial programmes are a few examples of the various CAI applications. The ideas of tiny steps, active responding, quick reinforcement, self-pacing, and student evaluation are among the psychological concepts incorporated into the CAI.

The CAI can be altered to meet the diverse needs of different learners. To meet the needs of the learner, adjustments can be made to the task difficulty level, the scope of remediation, the pace of instruction, the frequency of reinforcement, and the usage of motivational components. The application of CAI reveals an improvement in both efficacy and efficiency. Computers can be used to teach new concepts or skills, provide remedial instruction, enhance learning, encourage original thought, and solve problems, among other things.

Multimedia Based Computer Software in Biology

Three factors—instructional method, screen design, and human factors—are essential to the creation of multimedia-based computer software for biology. Courseware built on a curriculum and centered on these three elements and created by educators can move the teaching-learning process forward with new technological advancements. A quality piece of educational software should stimulate learning as well as impart knowledge. As a result, collaboration between teachers and course wave designers is necessary to create curriculum-based learning packages.

The researcher should have a solid understanding of the +2 Biology textbook and be able to identify the chapters that are best suited for the creation of multimedia computer-based teaching and learning packages. While preparing Teaching Learning packages for the Biology subject, he would have also had discussions with biology teachers, computer experts, and educational technologists. As a result, the researcher chose one chapter, "Electrostatics," a +2 Biology syllabus-based content area.

An educational self-learning programme should meet the needs of each individual learner and impart conceptual knowledge at the student's own pace. A syllabus-based instructional self-learning package using the tutorial method was therefore settled upon.

Need for the Study

Computers with multimedia technology are extremely important in our country's classrooms. Technology integration in education was emphasised in the National Education Policy of 1986. A method of education that is gaining popularity is computer assisted instruction (CAI). In schools, teaching and learning may be very challenging for both students and teachers, especially when it comes to biology. It highlights how crucial it is to customise the instructions for each student, and multimedia computers can help with that. Additionally, the use of computers and multimedia in the classroom has a significant impact on how students learn and think.

The use of instructional techniques is seen to be an efficient means of controlling student learning, which raises academic accomplishment. There is a large body of research that demonstrates that using multimedia techniques when teaching pupils will enhance their learning. It has been demonstrated that using CAI to teach biology boosts both student achievement and their capacity for self-regulation. Therefore, it is crucial to determine the efficiency of multimedia instruction delivered via computer and its impact on all student accomplishment categories.

Objective

- ✓ Compare the mean gain achievement scores of two groups of pupils taught Biology with and without the use of Multimedia Teaching Programme before the experimental treatment.
- ✓ Compare the mean gain achievement scores of two groups of pupils taught Biology with and without the use of Multimedia Teaching Programme after the experimental treatment.

Hypothesis

In terms of hypotheses, the objectives of the study would translate themselves as:

Hypothesis- There is no significant difference will be found in the academic achievement of the students before and after teaching by traditional teaching method and multimedia teaching method.

Technical Terms

Academic Achievement:

Academic achievement is the proficiency of students assessed by school authorities on the basis of their performance in text or exam regularly conducted by school form the content taught in various subjects. But in this study pre-test & posttest experimental control design will be used for English subject. The marks obtained by students in the pre & posttest development by investigator will be treated as academic achievement of students in present study.

Multimedia:

“Multimedia means the use of more than two media of communication in a learning package or instructional procedure.” Multimedia comes in different formats. It can be almost anything you can hear or see like text, picture, music, sound, video, rewards, films, animation etc.

Teaching approach:

It is a set of principles, beliefs, or ideas about the nature of learning which is translated into the classroom. An approach is a way of looking at teaching and learning. Underlying any language teaching approach is a theoretical view of what language is, and of how it can be learnt. An approach gives rise to methods, the way of teaching something, which use classroom activities or techniques to help learners learn.

Biology:

Biology is the branch of Science that deals with the life of living organisms in all forms and phenomena, especially with reference to origin, growth, reproduction, structure and behavior.

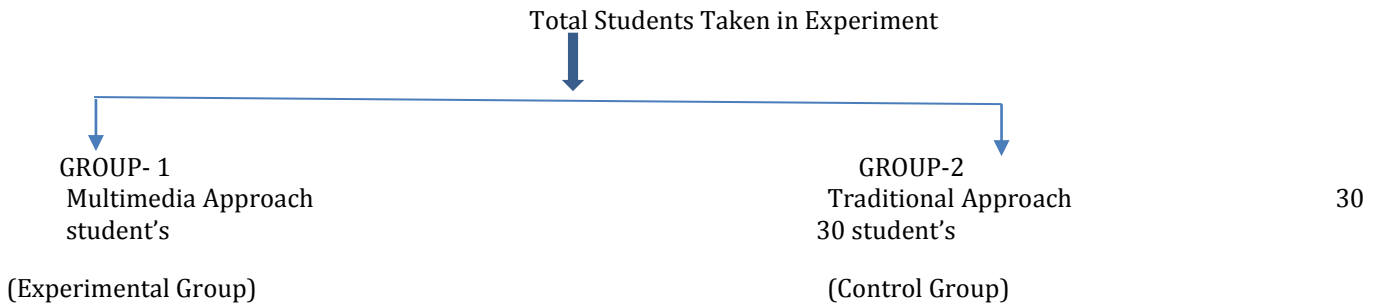
Population

A population refers to any collection of specified groups of human beings or of non-human entities such as objects, educational institutions, time units, and geographical areas, prices of wheat or salaries drawn by individuals. Some statisticians call it universe. A population containing a finite number of individuals, members or units is a class.

The Selected part which is used to ascertain the Characteristics of the large group is called Sample. Sample is a sub section or cross section of the large group.

In this Research the Researcher choose all the students from the school of Jaipur district.

Sample



Major Findings:

Statistical Analysis of data of the present study reveals the following findings:

Conceptual Hypothesis -There is no significant difference has been found in the academic achievement of the students before and after teaching by traditional teaching method and multimedia teaching method.

Group	test	N	Mean	S.D.	t-ratio	Level of significance
Control and Experimental	Pre-test	30	22.15	3.78	6.36	Significant at 0.05
	Post-test	30	28.6	3.68		

$df = (N1+N2-2) = (30+30-2 =58)$

Significant value 1.98 at the 0.05 level

The table shows the descriptive statistics of pre and post- test scores of achievement test in 11th Biology between 30 underachievers of control group and 30 underachievers of experimental group

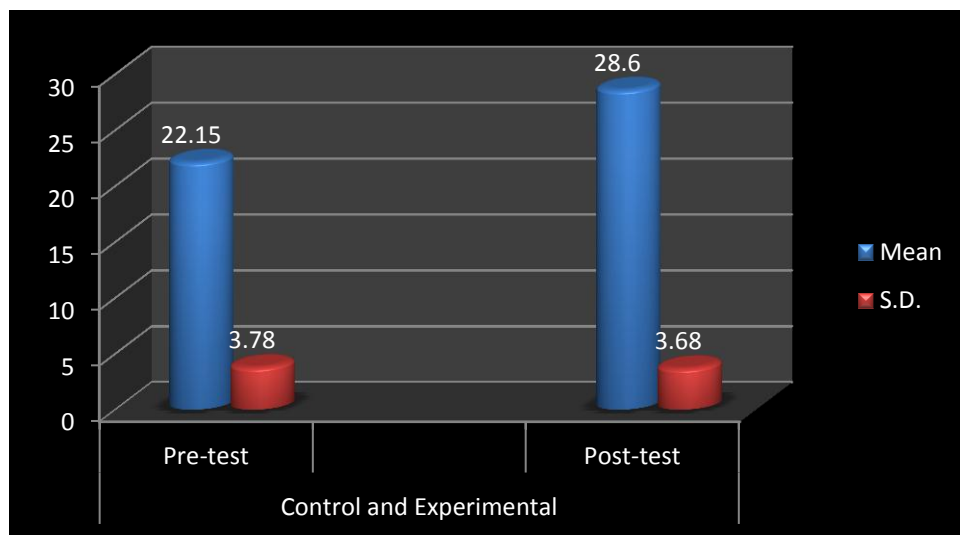


Figure-1 Difference between students before and after teaching by traditional teaching method and multimedia

Discussion of Results:

The goal of the current study was to compare the efficacy of a multimedia instruction package and a programmed instruction package for teaching biology to higher secondary school students. The study's conclusions made it very evident that a multimedia teaching approach may raise pupils' achievement levels. Since it improves educational quality,

educationists must have a more in-depth understanding of the systems that allow multimedia lessons to be directly linked to aspiring teachers. The comparison of multimedia with other teaching strategies and methods has been the subject of numerous studies. The majority of them have come to the conclusion that multimedia instruction helps students learn and succeed better than other teaching strategies or methodologies.

In the present study no significant difference was found in Pre-test achievement scores of Biology students of Control Group, Experimental Group but significant difference was found in Post- test Achievement scores of Biology students of Control Group, Experimental Group.

The Biology students of Experimental Group who were taught through Multimedia Instruction Package achieved more than those Groups of Biology students who were taught through Traditional and Programmed Instructional Package. The finding of the present study was in conformity with the findings of the following previous studies results which were conducted on Effectiveness Multimedia Instruction.

Findings- A significant difference between the accomplishment scores of the two groups was discovered when the post-test biology achievement scores of the control group and experimental group were compared.

Major Findings

- Because the two groups' levels of intelligence have not significantly differed, the control and experimental groups were homogenous.
- Since there was no discernible difference between the achievement scores of the control groups pre- and post-tests in biology, it can be said that traditional teaching methods did not successfully teach biology.
- The use of multimedia in biology instruction was successful, as evidenced by the fact that underachievers in science performed better on achievement tests following the post-test.
- A substantial difference between the achievement scores of the two groups was discovered when the post-test scores of achievement in biology for the control group and experimental group were compared.
- Multimedia based teaching method proved to be better than traditional direct method of teaching Biological science to class IX underachievers in science.

Conclusion

The adoption and application of multimedia in biology instruction has a favourable effect on students' biology learning results. Multimedia lessons are more effective and easier for pupils to understand. It is superior to the traditional approach in terms of how well biology students' attitudes and cognitive development are being developed. The utilisation of multimedia in the classroom is more appealing and encourages students to have a positive attitude toward learning biology, which enhances student performance.

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