



MULTIMEDIA IN TEACHING AND LEARNING

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ABSTRACT:

Multimedia, in general, is the fusion of audio and visual representations. These depictions might contain components from texts, graphic design, sound, animation, and video. However, in such systems where information is digitalized and processed by a computer, multimedia is constrained. Hypermedia and interactive multimedia programs are those in which the user plays a more active role. Given that it enhances learning, education is probably the most advantageous setting for multimedia and the one in which it may be used most effectively. Even "stand alone" applications (on CD-ROM) or web pages can be created as part of a multimedia project. The development of multimedia applications for the Internet is, however, subject to a number of technical limitations. Hardware, software, talent and expertise are all required for creating multimedia projects. One or more authoring systems and different editing programs for text, images, sounds and video are the required pieces of software for multimedia development. One of the biggest problems in underdeveloped countries is still getting a good education. Many strategies, including the use of multimedia technology, have been tried to give many people in developing nations access. The systematic application of various multimedia teaching and learning techniques is examined in this study. It looks at how multimedia technologies have shown to be an effective way to guarantee that everyone has access to top-notch education and help kids do better in school. The research looked into the application of multimedia in teaching(instruction) and learning. The tools that are currently available go beyond words and visuals. They also contain audio, video, 3-D, and animation. According to the study's findings, the majority of multimedia teaching and learning tools are created with both the solution's users and the subject's pedagogical material in mind. On the other hand, their success can be tied to the technology and elements that went into making the many Multimedia tools that different groups and themes utilised. This article presents various components of Multimedia that can be used in teaching and learning processes.

KEY WORDS: Multimedia, Learning, Teaching, Technology.

INTRODUCTION:

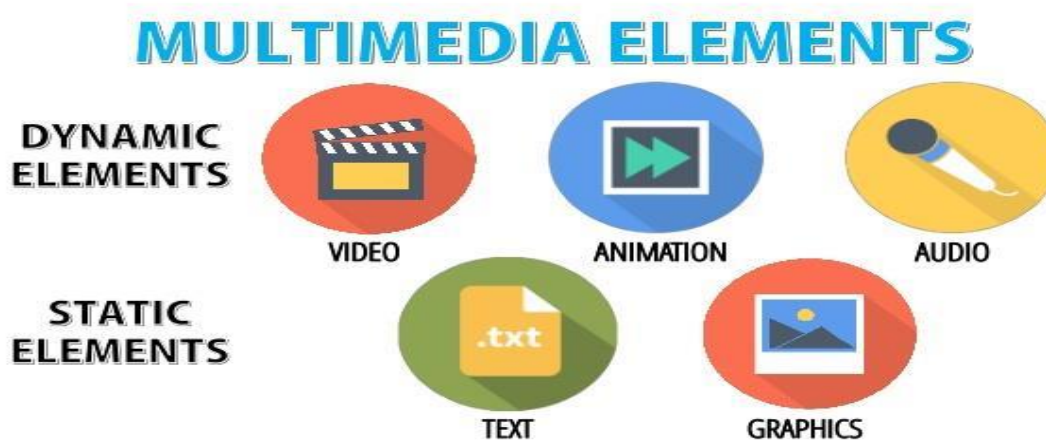
Multimedia learning is the process of learning using multimedia displays and instructional techniques, typically in a classroom or other similarly controlled context. Any subject may normally benefit from this, and most learning processes can be improved or completed through the thoughtful use of multimedia content. Applying multimedia elements carefully can either result in or improve the learning process. Given, how frequently technological advancements have made the incorporation of multimedia into the classroom easier and more thorough, multimedia learning is frequently directly related to the use of technology in the classroom.

The phrase "multimedia" is generally used to describe any program or activity that presents ideas using a variety of media or forms. Multimedia learning in the context of education typically refers to the use of various forms of media to impart knowledge or supplement it with additional examples or exercises for students. This kind of education can be as straightforward as having students see World War II-era film clips while studying the conflict in history class or as complex as having them utilize computer tools to build simulations while studying physics. The relationship between multimedia learning and technology is typically established, because technological advancements frequently make the usage of various media simpler and more affordable for educational institutions and teachers. The overhead projectors that are used in the classroom serve as an example of this. Initially, these projectors allowed professors to express ideas in writing in a way that the entire class could see more easily, transcending the restrictions of the chalkboard. Modern smart boards and digital projectors, which have replaced older projectors, enable teachers to type at computers and have their work shown for the entire class to see.

A teacher may effortlessly include computer-based, interactive presentation software or video clips into a class as part of this sort of multimedia learning. However, multimedia learning extends beyond rote learning and can also let students engage with computer programs and visual or aural presentations to deepen their education. For instance, some students might be able to learn about the human body through lectures and illustrations in books that highlight the many bodily systems. However, for some pupils, using a computer software that offers a digital representation of the human body and how each system is interconnected might be much more effective. Particularly given that the students can engage with the model and examine each component alone and together from a variety of perspectives. One of the pillars of multimedia learning is the attempt to provide students with the means of learning while also allowing them to do so in the manner that is most relevant to them.

THE FIVE ELEMENTS OF MULTIMEDIA:

Multimedia utilises a variety of digital formatting approaches and fall into one of five primary groups. Any person can utilize one of these pieces of material, or any combination of them, to improve your website or social media platform.



1. Text

Text is a multimedia option that is frequently disregarded, but it remains the most essential component and most efficient means of communication in multimedia. Headlines, subtitles, and slogans all use text. Its main objective is to provide certain information or to support information from other media. It uses several font styles, sizes, hues, and backgrounds. For instance, you can use font, size, and color to project an image or define the mood you want to convey. You can even change the background color. Text can be used to access other media or related information by clicking on text links, it can be used as an alternative if a visitor's browser does not support digital images, and it can help make the intended message you want to express through multimedia more understandable. Multimedia text choices are virtually endless.

Presentational characteristics of text:

- Text allows for the linear sequencing of information in a structured format.
- Text can present and separate empirical evidence or data from the abstractions, conclusions, or generalizations derived from the empirical evidence.
- Text's linear structure allows for the development of a coherent, sequential argument or discussion.
- Text can relate empirical evidence to related empirical evidence.
- Still graphics, such as graphs or diagrams, allow knowledge to be presented differently than written language, either by providing concrete examples of abstractions or by offering a different way of representing the same knowledge. Text's recorded and permanent nature enables independent analysis and critique of its content.

2. Graphics

Multimedia relies heavily on graphics since people are visual creatures. Graphics on a website or in social media include pictures like photos, paintings, sketches, clip art, icons, or any other non-text elements. In these kinds of photos, there is no movement. Text is frequently accompanied by still or static images to further highlight a point or ideas. A multimedia application can do more with photos than just use them for aesthetics. Slide displays or galleries are examples of graphics in a multimedia setting that website or social media users can view.

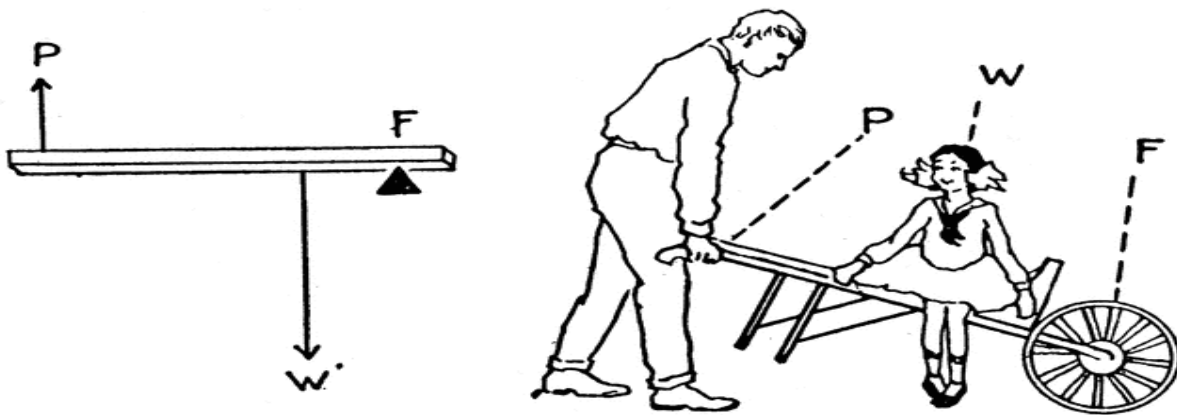
They might be clickable, directing the visitor to a different component like audio or video. Many multimedia applications use graphics to communicate through eye-catching visual effects.

Ways to Use Graphics for Learning:

Almost everyone has a viewpoint on the best way to incorporate graphics into training materials. Most individuals choose visual elements based on superficial characteristics, such as style, coloration, degree of realism, etc. Despite the fact that these are unquestionably vital factors, they are hardly, if at all, related to how well a graphic enhances the learning process. Evidence reveals that your usage of visuals rather than their aesthetic qualities is more crucial when it comes to learning. Regardless of how it seems, a graphic's ability to effectively convey your idea is considerably more crucial. To represent something's true appearance, representational graphics are utilized.

While teaching concepts that students would confront while applying their learning to real-world problems, these kinds of graphics work best.

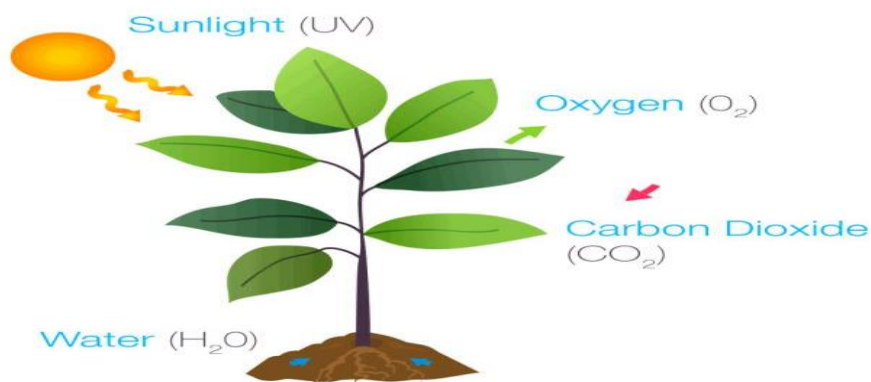
A few examples of representational graphics are software program screens, forms, tools, etc.



Graphic demonstrating levers in Physics

3. Animation

Multimedia projects frequently use animated elements. An animation is a collection of images combined to create the illusion of movement. Digital animation in 2D and 3D is utilized in multimedia. To better illustrate concepts including movement, movement should be used rather than just a still image. Animation can be utilized to spice up a scene or draw attention to crucial details or linkages. It may provide fascinating facts or explanations of how things operate. Animation can also have interactive elements that let viewers participate with the action using their keyboard and mouse. An extremely effective method of communication, animation is dynamic, media-rich material that remains contained within one container on a page.



Animation showing exchange of gases in plants

4. Audio

A website's design and social media platforms can benefit from sound. It is a multimedia program that incorporates spoken word, audio narration, music, and sound effects. The audio or sound aspects are what they are known as. When utilized sparingly, adding multimedia to any presentation, such as sound, may be a fantastic method to grab and hold the audience's attention, convey information to viewers, and support viewers' understanding of the information presented. For instance, narration can be used to explain what is observed in an animation clip, improving the viewer's comprehension of the clip's main theme. Multimedia applications that include relevant music and unique sound effects are also excellent ways to enhance the visitor's experience.

5. Video

A video is a visual multimedia program that blends a series of still photos with sound to create moving images. Websites and social media platforms can be significantly and powerfully impacted by video. One can advertise their business, let people know it exists, attract attention to demonstrate a task to visitors, introduce a new product, increase brand recognition, or even publicize an upcoming event. With video, one can accomplish anything.

A task or theory can be demonstrated practically through video, which is the perfect medium for this. This kind of content has a long history of use in education since it appeals to pupils with a variety of preferred learning styles. The countless well-liked examples on YouTube show how effective this type of movie is at illuminating both simple and difficult subjects.

Why Teach with Video?

When students can watch videos outside of class, teachers can use class time for comprehension tests, discussions, and material reinforcement.

The learning process is varied and enhanced with multimedia information, which improves knowledge retention. Students may have additional opportunity to interact with the material if there is educational video available. Video-based course materials are accessible to students all around the world. Sometimes, video can

more effectively access different eras and places while demonstrating complicated ideas than spoken can. Instructors can overcome obstacles like time constraints and huge class sizes with the aid of video.

What can we do with video?

Video can be used by teachers to give their students extra resources. This can support material reinforcement and provide tools for students to get ready for exams.

Many educators have benefited from flipping their classrooms utilizing video. In a flipped course, the majority of the learning takes place outside of class.

Flipped classes are advantageous for teachers. When a course is taught in a flipped format, teachers have more time to interact with their students as opposed to rushing through the presentation of new material. An instructor can reuse a relevant film they have made or acquired for new students in a variety of learning scenarios once they have a permanent collection of learning resources. Flipped classrooms are advantageous for students. Students have additional opportunity to interact with their instructor and peers in a flipped course. Additionally, students are given more control over their education and a degree of flexibility that is not possible in conventional class settings. The creation of Massive Open Online Courses, or MOOCs, relies heavily on video. These courses are made up of a number of learning modules that provide material explanations, with comprehension tests at the conclusion of each module. They are helpful for students studying in various environments all across the world.

How is Video Best used in the classroom?

The usage of television and video in schools has significantly risen over the past few decades and is now successful and beneficial. Teachers are getting better at incorporating these media into their lessons as technology advances and becomes both more complex and user-friendly. In a recent survey, 88% of teachers indicated that "it enabled them to be more creative" in the classroom, and 92% said that using TV and video helped them teach more successfully (CPB, 2017).

Like all other instructional tools, the effectiveness of video depends on how it is used in the classroom. When the video is included into the rest of the class, positive learning and affective outcomes are significantly increased and extended, according to reviews and meta-analyses of the research.

Preparation and activities before, during, and after viewing are necessary for effective video integration into classroom learning. By previewing the material, defining definite viewing objectives, and selecting the options that will best support those objectives, teachers can get ready to use video. How well a video fits into the curriculum, or how well the information complements the overall instructional plan, determines how valuable it is. For example, video can be utilized to pique students' interest at the beginning of a course, to demonstrate concepts in-class that might not otherwise be possible, or to review or reinforce material. In order to encourage students to use video as active learners, the appropriate environment must be created.

In addition to being helpful for any learning work, setting expectations for students and providing a context for the activity may be particularly important while watching videos with highly emotive content.

Selecting Video Content:

To use this medium effectively and fulfil the potential of multimedia in the classroom, it is crucial to choose high-quality videos. One of the most important variables in the success or failure of an educational technology is the quality of the content, rather than the technology itself, according to an assessment of the historical, political, and economic circumstances of each major classroom technology throughout the previous century.

For video to be as effective as possible, choosing content that is both compelling and visually appealing is essential.

The best usage of video makes the most of its visual content because it is a visual medium. This entails giving visual examples or proof, dramatizing situations and ideas, and appealing to the emotions. Students' comprehension might be aided by educational media that incorporates cognitive modelling elements and teaching methodologies. Examples include enlarging on particulars, including titles and other attention-grabbing images, and including animations. Videos with closed captioning can help students become more fluent readers and increase their desire to read.

The following are suggestions of positives to look for when evaluating videos:

- Presentation variety;
- humour;
- age- and developmentally-appropriate narration;
- sectioning;
- the use of meaningful examples;
- the use of open-ended questions;
- opportunities for students to engage in independent thought;
- opportunities for extension;
- teacher guides outlining potential previewing or extension activities.

Video loses its effectiveness if the choices being presented rely too heavily on its non-visual components and take advantage of its limitations by presenting abstract and non-visual information, relying excessively on the "talking heads" method of information delivery, or making intellectual claims that are not supported by tangible evidence. Video is most successful when the auditory and visual modes are combined since it communicates information in both of these ways. Excessive usage of still frames or slides, overly dramatic soundtracks, and images and narration that don't complement one another can all detract from the instructional message.

Merits of using Multimedia in the Classroom:

Teachers can better engage students and give them worthwhile learning opportunities by utilizing multimedia in the classroom. An image is easier to recall than a paragraph, an animated movie of a concept is more valuable than a lecture, and a film of a scientist demonstrating a process (or an instrument) provides more real-world information than a theoretical explanation. There is no denying that educators view multimedia as a fantastic tool for enhancing student learning.

The following are some advantages of employing multimedia in the classroom:

- Multimedia enhances reflective thinking,
- gives students access to materials that are appropriate for their learning styles and skills, &
- encourages students to design and produce their own content rather than simply absorbing representations made by others.

To meet the standards for 21st-century learning, the majority of educators and administrators are implementing the most recent educational technologies. The use of multimedia is one of the best techniques for engaging pupils out of all those technological strategies.

Here are some ideas from educators for innovative uses of multimedia in the classroom:

I. Personalized Learning using Multimedia Resources:

Different learners can meet their learning needs with the use of multimedia materials. Since each student learns in a unique way, instructors can easily give each student access to the appropriate learning resources by employing multimedia. Teachers can utilize YouTube to offer interactive games for tactile learners, podcasts for auditory learners, and online videos for visual learners. Students can easily learn anything using their own learning methods thanks to multimedia resources. The usage of multimedia results in customization of learning, in contrast to conventional methods, in which only the teachers used to lead the entire classroom while delivering lengthy lectures at the same pace.

II. Group Learning:

Students can collaborate to understand a certain idea using multimedia technologies like blogs, social networks, and wikis. These are used by students to present their work to others, comment on others' work, and engage in group discussions about a particular subject. Either blogging or microblogging (Tweets) can be used for this. With the use of these multimedia technologies, teachers may get students involved in a variety of projects while also seeing their teamwork, peer evaluation of one another's work, and collective learning.

III. Improve Presentation skills:

Storyboarding, films, and slideshows are excellent tools for enhancing student learning because they enable them to interact with text in a highly visual manner with the use of multimedia. Students

who use multimedia technologies may communicate their thoughts and works in clear, attention-grabbing ways that engage the audience. They also learn how to convey ideas and concepts using a range of materials, such as text and audio narrations.

Giving students a larger selection of software and tools to show their work is a good strategy because it enables students to select the presentation style that most closely matches their personality. Additionally, it helps students engage in their education in a more individualized manner and develops their critical thinking, creativity, and introspective abilities.

Practical Disadvantages to Using Multimedia:

Depending on the subject and the quantity of unique content a teacher generates, multimedia lessons or components of lessons presented via video or image require computers, projectors, and other electronic devices. The cost of providing each student with a high-quality projector or computer can be fairly significant, and as a result, the quantity of images and videos in a session may cause delivery and class speed to lag. Problems with student access to computers at home and uneven project and presentation quality can result from different student electronic devices. The role of the teacher changes from instructor to facilitator while creating a multimedia learning experience.

Classroom management becomes more challenging if a session permits students to complete learning at their own pace as they advance through learning stages. This is especially true if students use computers or examine multimedia resources in groups. Additionally, less tech-savvy students might need to devote more time to mastering computer skills in order to access information than to studying the course materials.

Multimedia Storage:

Because streaming media, such as audio and video, as well as static media, require a significant amount of storage, multimedia storage is a key issue when building multimedia solutions. Memory space is heavily used by even static material like photos. There are two types of storage: physical storage devices and database-based storage.

Some of the popular devices for multimedia storage are:

1. Magnetic medium, first. such as tapes, floppies, and discs
2. optical storage. Gramophone, CD, CD-ROM (read-only memory), CD-R (CD-read), CD-RW (read-write), and enhanced CD are a few examples.
3. Solid-state chip and Flash devices
4. Online storage
5. File systems (classic and modern)

The following are the output devices for the data stored:

1. CD-ROM
2. DVD
3. Scanner (for data collection)
4. Charge-coupled devices (CCDs), another type of data collecting device.

CONCLUSION:

The present world is dependent mostly on the multimedia and its applications. The developments in this multimedia computing provide various features for the users and developers. With the applications of multimedia, the information industry changed a lot. The evolution in multimedia provides the features like games, internet, and presentations of data in variety of formats. The fields of multimedia like systems, technologies, applications and software are all used simultaneously in the systems achieving the best results. And by overcoming the drawbacks like memory usage and temporal relationship between data, multimedia applications can process easily and gives the best results.

Multimedia possessed a lot of advantages to make learning interesting. With the help of its elements, it can invoke creativity in both teacher and students so that they can apply it in order to teach or learn. Learning also become much easier with the help of multimedia. multimedia can help improve our educational system. This is a must because we need to keep up our pace with the evolvement of our technology.

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