



**ACADEMICIA**  
**An International  
 Multidisciplinary  
 Research Journal**  
 (Double Blind Refereed & Peer Reviewed Journal)



**DOI: 10.5958/2249-7137.2021.01177.0**

## THE ROLE OF MULTIMEDIA IN EDUCATION

**Xakimboyeva Ozoda\*; Xurramova Maftuna\*\***

\*Teacher,  
 State World Languages University,  
 UZBEKISTAN

\*\*Fourth year student of Uzbekistan State World Languages University,  
 UZBEKISTAN

### ABSTRACT

*This can present a challenge to educators wishing to engage students in the classroom while still providing required content in order to enhance learning outcomes. In Teaching and learning communication skills, we have a lot to choose from the world of technology: TV, CD Rom, Computers, the Internet, Electronic Dictionary, Email, Blogs and Audio Cassettes, Power Point, Videos, DVD's or VCD's. The last two decades have witnessed a revolution due to onset of technology, and has changed the dynamics of educational institutes, and has also influenced the educational system and the way people interact and work in the society. This rapid rising and development of information technology has offered a better pattern to explore the new teaching model. Using multimedia to create a context to teach communication skill has its unique advantages. As a result technology plays a very important role in teaching communication skill.*

**KEYWORDS:** *Multimedia, Education, Media, Image, Graphics.*

### INTRODUCTION

It is probably one of the most exciting innovations in the information age. The rapid growth of multimedia technologies over the last decade has brought about fundamental changes to computing, entertainment, and education (Norhayati& Siew 2004). Multimedia technologies and applications are probably one of the most exciting innovations in the age of information evolution. They helped and got help from the Internet and other communication and computer inventions. 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).

### **The history of multimedia**

The term "multimedia" was coined by Bob Goldstein to promote the July 1966 opening of his "Light Works at L' Oursin" show at Southampton, Long Island. On August 10, 1966, Richard Albarino of Variety borrowed the terminology, reporting: "Brainchild of song scribe-comic Bob Goldstein, the 'Light works' is the latest multi-media music-cum-visuals to debut as discothèque fare". Two years later, in 1968, the term "multimedia" was re-appropriated to describe the work of a political consultant, David Sawyer, the husband of Iris Sawyer one of Goldstein's producers at L'Oursin.

This term is said to date back to 1965 and was used to describe a show by the Exploding Plastic Inevitable. The show included a performance that integrated music, cinema, special lighting, and human performance. In the 1993 first edition of McGraw-Hill's *Multimedia: Making It Work*, Tay Vaughan declared "Multimedia is any combination of text, graphic art, sound, animation, and video that is delivered by computer. When you allow the user – the viewer of the project – to control what and when these elements are delivered, it is interactive multimedia. When you provide a structure of linked elements through which the user can navigate, interactive multimedia becomes hypermedia."<sup>1</sup>

In common usage, the term multimedia refers to an electronically delivered combination of media including video, still images, audio, text in such a way that can be accessed interactively. Much of the content on the web today falls within this definition as understood by millions. Some computers which were marketed in the 1990s were called "multimedia" computers because they incorporated a CD-ROM drive, which allowed for the delivery of several hundred megabytes of video, picture, and audio data.

Accordingly, it is media and content that uses a combination of different content forms. The term can be used as a noun (a medium with multiple content forms) or as an adjective describing a medium as having multiple content forms. The term is used in contrast to media which use only rudimentary computer display such as text-only or traditional forms of printed or hand-produced material. Moreover it includes a combination of text, audio, still images, animation, video, or interactivity content forms.

Multimedia is usually recorded and played, displayed or accessed by content processing devices, such as computerized and electronic devices, but can also be part of a live performance. Multimedia as an adjective also describes media devices used to store and experience multimedia content.<sup>2</sup> Besides multiple types of media being integrated with one another, multimedia can also stand for interactive types of media such as video games, CD ROMs that teach a foreign language, or an information Kiosk at a subway terminal. Other terms that are sometimes used for multimedia include hypermedia and rich media.

Once the media elements have been digitized and stored in the PC, they can then be edited or modified in software packages. In these packages, the media elements are modified to include special effects and filters to further enhance its look and perspective. The group members who

were designated as graphic designers had the responsibility to edit images in image-editing packages. Many chose to use Adobe Photoshop for this purpose. Adobe Photoshop is a sophisticated image-editing tool that is popularly used to modify and edit digital images. Other media elements like animations were digitally created in animation software like Macromedia Flash and 3D packages like Kinetix 3D Studio Max. Authoring is the stage where all the media elements that have been created or modified and stored digitally in the PC are brought together into one final application and integrated into a cohesive presentation for the purpose of conveying a specific message to the audience. It is also at this stage that elements of interactivity and navigation are incorporated to involve the user in the application and to create a multi-sensory experience.

### **The role of multimedia in education**

The world in which we live is changing rapidly and the field of education is experiencing these changes in particular as it applies to Media Services. The old days of an educational institution having an isolated audio-visual department are long gone! The growth in use of multimedia within the education sector has accelerated in recent years, and looks set for continued expansion in the future.

The use of multimedia in education has been extensive, as it has been effective in increasing productivity and retention rates, where research has shown that people remember 20% of what they see, 40% of what they see and hear, but about 75% of what they see and hear and do simultaneously. This is especially significant in the CBT (Computer-Based Training) modules in corporations like Ernst & Young, and Union Pacific, where employees are trained in organizational procedures and in flight simulations in the aviation industry to train pilots. It is now permeating the educational system as a tool for effective teaching and learning. With multimedia, the communication of the information can be done in a more effective manner and it can be an effective instructional medium for delivering information. A multi-sensory experience can be created for the audience, which, in turn, elicits positive attitudes toward the application. Multimedia has also been shown to elicit the highest rate of information retention and result in shorter learning time. On the part of the creator, designing a multimedia application that is interactive and multi-sensory can be both a challenge and a thrill. Multimedia application design offers new insights into the learning process of the designer and forces him or her to represent information and knowledge in a new and innovative way.<sup>3</sup>

Multimedia, defined, is the combination of various digital media types such as text, images, sound and video, into an integrated multi-sensory interactive application or presentation to convey a message or information to an audience. In other words, multimedia means “an individual or a small group using a computer to interact with information that is represented in several media, by repeatedly selecting what to see and hear next”.

Multimedia is changing the way we communicate with each other. The way we send and receive messages is more effectively done and better comprehended. The inclusion of media elements reinforces the message and the delivery, which leads to a better learning rate. The power of multimedia lies in the fact that it is multi-sensory, stimulating the many senses of the audience. It is also interactive, enabling the end-users of the application to control the content and flow of information (Vaughan, 1998). This has introduced important changes in our educational system and impact the way we communicate information to the learners (Neo & Neo, 2000). The

evolution of multimedia has made it very possible for learners to become involved in their work. With multimedia technologies, they can create multimedia applications as part of their project requirements. This would make them active participants in their own learning process, instead of just being passive learners of the educational content.

Teachers primarily require access to learning resources, which can support concept development by learners in a variety of ways to meet individual learning needs. The development of multimedia technologies for learning offers new ways in which learning can take place in schools and at home. Enabling teachers to have access to multimedia learning resources, which support constructive concept development, allows the teacher to focus more on being a facilitator of learning while working with individual pupils. Extending the use of multimedia learning resources to the home represents an educational opportunity with the potential to improve pupil learning.

The elements used in multimedia have all existed before. Multimedia simply combines these elements into a powerful new tool, especially in the hands of teachers and pupils. Interactive multimedia weaves five basic types of media into the learning environment: text, video, sound, graphics and animation. Since the mode of learning is interactive and not linear, a pupil or teacher can choose what to investigate next. For example, one does not start on the first page of a linear document and read to the end. Interactive multimedia learning mode is more like constructing a spider's web, with one idea linked to another, allowing choices in the learner's path.

The multimedia technologies that have had the greatest impact in education are those that augment the existing curriculum, allowing both immediate enhancement and encouraging further curriculum development. For example, the WWW serves as a storehouse of information that individual learners can search for subject matter content that specifically fits their learning agendas. Multimedia applications for computers have been developed for single computing platforms such as the PC, Apple Mac and games machines.

It is very tempting to use the latest computer wizardry to represent information and develop computer enhanced learning materials. However, the instructional design of these systems should be based on a careful examination and analysis of the many factors, both human and technical, relating to visual learning. When is sound more meaningful than a picture? How much text is too much? Does the graphic overwhelm the screen? For a pupil, this allows them to test all of their skills gained in every subject area. Pupils must be able to select appropriate multimedia tools and apply them to the learning task within the learning environment in order for effective learning to take place.

In teaching English for Kids, multimedia is used to produce computer-based training courses (popularly called CBTs) and reference books like encyclopedia and almanacs. A CBT lets the user go through a series of presentations, text about a particular topic, and associated illustrations in various information formats. Edutainment is an informal term used to describe combining education with entertainment, especially multimedia entertainment.<sup>4</sup>

Learning theory in the past decade has expanded dramatically because of the introduction of multimedia. Several lines of research have evolved (e.g. Cognitive load, Multimedia learning, and the list goes on). The possibilities for learning and instruction are nearly endless.

---

The idea of media convergence is also becoming a major factor in education, particularly higher education. Defined as separate technologies such as voice (and telephony features), data (and productivity applications) and video that now share resources and interact with each other, synergistically creating new efficiencies, media convergence is rapidly changing the curriculum in universities all over the world. Likewise, it is changing the availability, or lack thereof, of jobs requiring this savvy technological skill.

English teaching today has gone into the vicious circle. Teachers need to consider how to perfect the teaching system to improve pupils' practical ability of English. Therefore an efficient way should be used to make the class vivid. Multimedia teaching will bring pupils into a class where they can interact with the teacher and the subject. Multimedia teaching is more intuitive than old ways; teachers can simulate situations in real life. More importantly, teachers will have more approaches to stimulating pupils' passion of learning

A *Multimedia Learning* environment involves a number of components or elements in order to enable learning to take place. Hardware and software are only part of the requirement. As mentioned earlier, multimedia learning integrates five types of media to provide flexibility in expressing the creativity of a pupil and in exchanging ideas

**Text.** Out of all of the elements, text has the most impact on the quality of the multimedia interaction. Generally, text provides the important information and acts as the keystone tying all of the other media elements together. It is well written text that makes a multimedia communication wonderful.

**Sound.** Sound is used to provide emphasis or highlight a transition from one page to another. Sound synchronized to screen display, enables teachers to present lots of information at once. This approach is used in a variety of ways, all based on visual display of a complex image paired with a spoken explanation. Sound which is used creatively becomes a stimulus to the imagination, or which is used inappropriately it becomes a hindrance or an annoyance. For instance, a script, some still images and a sound track, allow pupils to utilize their own power of imagination without being biased and influenced by the inappropriate use of video footage. A great advantage is that the sound file can be stopped and started very easily.

**Video.** The representation of information by using the visualization capabilities of video can be immediate and powerful. While this is not in doubt, it is the ability to choose how we view, and interact, with the content of digital video that provides new and exciting possibilities for the use of digital video in education. There are many instances where pupils who are studying particular processes, may find themselves faced with a scenario that seems highly complex when conveyed in purely text form, or by the use of diagrams and images. In such situations the representational qualities of video help in placing a theoretical concept into context.

Video can stimulate interest if it is relevant to the rest of the information on the page, and is not 'overdone'. Video can be used to give examples of phenomena or issues referred to in the text. For example, while pupils are reading notes about a particular issue, a video showing a short clip of the author/teacher emphasizing the key points can be inserted at a key moment; alternatively, the video clips can be used to tell readers what to do next. On the other hand, it is unlikely that video can completely replace the face-to-face lecture: rather, video needs to be used to supplement textual information.



One of the most compelling justifications for video may be its dramatic ability to elicit an emotional response from an individual. Such reaction can provide a strong motivational incentive to choose and persist in a task.

The use of video is appropriate to convey information about environments that can be either dangerous or too costly to consider, or recreate, in real life. For example: video images used to demonstrate particular chemical reactions without exposing pupils to highly volatile chemicals, or medical education, where real-life situations can be better understood via video.

**Animation.** Animation is used to show changes in state over time, or to present information slowly to pupils so they have time to assimilate it in smaller chunks. Animations that are combined with user input enable pupils to view different versions of change over time depending on different variables.

Animations are primarily used to demonstrate an idea or illustrate a concept. Video is usually taken from life, whereas animations are based on drawings. There are two types of animation: Cell based and Object based. Cell based animation consists of multiple drawings, each one a little different from the others. When shown in rapid sequence, for example, the operation of an engine's crankshaft, the drawings appear to move. Object based animation (also called slide or path animation) simply moves an object across a screen. The object itself does not change. Pupils can use object animation to illustrate a point – imagine a battle map of Gettysburg where troop movement is represented by sliding arrows.

**Graphics.** Graphics provide the most creative possibilities for a learning session. They can be photographs, drawings, graphs from a spreadsheet, pictures from CD-ROM, or something pulled from the Internet. With a scanner, hand-drawn work can be included. Standing commented that, “the capacity of recognition memory for pictures is almost limitless”. The reason for this is that images make use of a massive range of cortical skills: color, form, line, dimension, texture, visual rhythm, and especially imagination.

Employing multimedia tools into the learning environment is a rewarding, but complex and challenging task. All of the multimedia formats available: text, sound, video, animation and graphics, already exist in one form or another in most libraries. Pupils can explore an almost infinite variety of information. All these explorations can certainly lead to new discoveries, but unless consumption is followed by production, the story ends. Without a chance to use their new discoveries and demonstrate what they have learned, the knowledge gained soon becomes the knowledge forgotten.

The technology needed to support classroom teaching has increased in complexity. Until only a few years ago all that a lecture room needed were some seats for the pupils, and a blackboard and a lectern or table for the teacher. Then came the overhead projector, slide projector and the return of TV with video player. Now there is the computer, networks and related display tools. From having a next to zero maintenance cost, the teaching room is becoming not only costly to equip, but costly to run and maintain, including the escalating costs of security such as typical multimedia based educational environment. The main teaching spaces are equipped with a standard set of presentation equipment, and full details of what is, and is not, available in each room.

Many school reform models focus on a significant restructuring of the classroom. They propose a shift from a teacher-centered didactic model to a learner-centered constructivist model. While details of these constructivist models vary, they typically include an emphasis on cooperative learning and on the use of project-based learning. Most types of school reform models recognize that multimedia brings a new dimension to reading and writing, and the need for pupils to develop basic skills in information retrieval in multimedia environments.

Pupils respond to information differently. Thus, it is often to our advantage as teachers to use many different formats and modes to teach the subject matter of a lesson. This is why teachers normally use some combination of lecture, text and hands-on laboratory for conveying information. With the advent of the Internet and the multiple formats that can be communicated over the World Wide Web, we now have several new and exciting ways to present information. The Web allows the incorporation of animation, moving pictures, and sound into lessons, which extends our abilities to present materials that encourage pupil interaction with the subject matter. Pictures and animations help bring to life scientific principles, and multimedia allows pupils to take a more active role in learning: they can watch experiments in action, see microorganisms up close, and use a mouse or keyboard to navigate images, simulations and interactive material. One of the advantages of using multimedia is to convey information quickly and effectively to all pupils – and keep them interested in learning.<sup>5</sup>

School-purchased multimedia such as videos and CDs work well, but these can be limited by school budgets. Another drawback of these tools is that given the hectic schedule teachers are often forced to keep, it can be a significant strain on our time to review multimedia materials and seamlessly incorporate them into a lesson plans. Finally, juggling a VCR and TV for video, a CD-ROM player, computer, projector, and textbook can be technically, as well as financially, challenging. Ideally, what teachers needs is a singlesystem that blends text, images, simulations, video, audio and other multimedia material into a single, coherent environment that is available from school or home.

One of the goals of Visionlearning is to provide just such a resource. Visionlearning provides clearly written, concise online multimedia modules that focus on core scientific principles in biology, chemistry, earth sciences, and physics. Our modules make it possible for you to reach out to pupils and allow them to view engaging presentations repeatedly. Our modules provide core, text-based lessons written to conform to the National Science Education Standards. These modules also offer original photographs, scientific illustrations, Flash animations, educational videos, audio recordings, interactive quizzes, and ask-a-question areas through a series of external hyperlinks on the right and bottom menu bars.<sup>6</sup>

Photographs and scientific illustrations appear embedded within our learning modules. Photographs of scientists on the right menu of our modules link to biographies to provide historical context to the lesson. Within the text of the lessons, center-aligned, hyperlinked text loads interactive animations or short movies that help convey the core topic discussed in the lesson. For example, our Scientific Method module contains an interactive experiment in which pupils are virtually transported to Pisa, Italy where they can simultaneously drop different sized objects off of the Leaning Tower. For more examples of our interactive animations, visit our sample animations page. Many of our illustrations and animations are reproduced in an

overheads area of the 'Resources' section (bottom menu) of our modules to provide teachers an easy way to show these materials to a class without having to search through a module.

Near the top of the right menu, all Vision learning modules contain an 'Experiment' section. This section contains links to educational videos and online interactive experiments that help augment the subject of the lesson. For example, our Cell module contains a link to a virtual tour of an animal cell. Our right-menu 'Classics' section contains links to journal articles, audio recordings and videos of scientists that have made key contributions to the field. In addition, interactive quizzes are contained in the bottom left 'Resources' section to provide pupils a way to self-assess their learning.

As a teacher, you can use Vision learning's multimedia materials on and off the Internet. Using the Internet, you can project a computer screen to your class, slowly scrolling through text and clicking on graphics and animations within a lesson. Alternatively, you can work offline with an overhead projector. Our overhead pages (available in the bottom left Resources section) are formatted to be printed on transparencies for classroom use.

Multimedia presentations keep pupils alert and focused. It would benefit your pupils immensely if they could hear a researcher's opinions, and read their original work. For example, Vision learning's Atomic Theory I module "Atomic Theory: The Early Days," has links to J.J. Thompson, a renowned physicist, speaking about his work in the early 1900s. In addition, we provide links to a biography of Thompson and a history of his work, and information about how Thompson went on to mentor other atomic scientists, including Ernest Rutherford.

## CONCLUSION

It is true that one of the ultimate goals of multimedia language teaching is to promote students' motivation and learning interest, which can be a practical way to get them involved in the language learning. Context creation of ELT should be based on the openness and Accessibility of the teaching materials and information. Concerning the development of technology, we believe that in future, the use of multimedia English teaching will be further developed. The process of English communication learning will be more student-centered but less time-consuming. Therefore, it promises that the teaching quality will be improved and students' applied English communication can be effectively cultivated, meaning that students' communicative competence will be further developed. In conclusion, we believe that this process can fully improve students' ideation and practical language skills, which is helpful and useful to ensure and fulfill an effective result of teaching and learning. Barring a few problem areas multimedia technology can be used effectively in classrooms of ELT with proper computer knowledge on the part of teachers, overcoming the finance problems in setting up the infrastructure and not allowing the teachers to become technophobes. Technology is advancing rapidly and is beginning to provide educators with a wealth of potential tools. The future of education is in finding those technologies that enable active learning experiences for students.

## REFERENCES

1. Richard Albarino. Goldstein's Light Works at Southampton (1966) Variety 213.
2. Vaughan Tay. Multimedia: Making it work (1993) Osborne/McGraw-Hill, Berkeley.
3. David Roberts. TEDx Talks (2013) Visual feasts of the mind: matching how we teach to how we learn.