

TECHNOLOGY ENABLED LEARNING & MULTIMEDIA: A REVOLUTIONARY APPROACH IN TEACHING AND LEARNING PROCESS

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Abstract:

This research paper attempts to delineate and outline the exercise of innovative tools and Information & Communication Technologies (ICT) in the development for teaching and learning process. Today ICT is acknowledged as one of the driving forces in shaping the new generation of young learners. Innovative tools have become known into a vibrant field of communication transfer today. This is used in all walks of life including, education, environment sustainability, health and medicine, international development, business, commerce and so on. This facilitates the people to accrue information regarding any field of interest whether it is science, arts, commerce, politics, ecology and so on. The employment of technology enabled learning and Multimedia related innovative sources in the classroom provide teachers and learners with pioneering and resourceful ideas. They facilitate teachers to cater to the requirements and curiosity of their learners. They also provide learners with a lot of language practice through activities using newspapers, magazines, radio, television, movies, books, internet, etc. and tasks which develop reading, writing, speaking and listening skills. Innovative tools inform, amuse, instruct, persuade, motivate, captivate, teach, startle, entertain, thrill, etc, but very seldom leave anyone untouched. The present study is an excellent endeavor in a series of successfully integrating the new technologies such as multimedia, and e-learning in classroom teaching and learning process. This pursues two key purposes. The first is to specify an introduction of innovative tool in classroom teaching and learning process that is in line with current international trends. The second is to propose innovative techniques of professional development for teachers necessary to implement the specified ICT in teaching successfully. In addition, it reveals the practical and realistic approach to Information and Communication Technology and teacher development that can be implemented quickly and cost effectively, according to available resources.

Key Words: E-learning, Information and Communication Technologies, Multimedia, Teaching and learning process.

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Introduction:

Teaching and learning process from the earlier days of its descent has undergone lots of revisions and re-revisions till the present with the inception of information and communication technology. The constantly growing need for good communication skills has created a huge demand for enhancement in teaching and learning process around the world. Millions of people today want to improve their teaching and learning process and opportunities to learn some innovative techniques are provided in many different ways such as the media and internet. The world-wide demand in the enhancement in the teaching and learning process has created an enormous demand for quality teaching, teaching materials and resources.

Almost every type of the teaching and learning process has technology to support teachers who followed the different methods and technologies in education, the blackboard — a perfect vehicle for the one way transmission of information. The blackboard was later on supplemented by the overhead projector, another excellent medium for the teacher dominated classroom, as well as by early computer software programs which provided were known as “drill-and-practice” (or, more judgmentally, “drill & kill”) teaching and learning exercises. In contrast, the audio-tape was the perfect medium for the audio-lingual method. By the late 1970’s the audio lingual method fell into disrepute, at least in part due to poor results achieved from expensive language laboratories whether in the lab in the classroom repetitive drills which focused only on language form & ignored communicative doubt meaning achieved poor results.

The last two decade have seen a full scale shift in the development of the teaching and learning process with stress on learner’s engagement with authentic, meaningful, and contextualized discourse. Within this general communicative trend, we can note distinct perspective, which have the implications in terms of how to integrate technology into the classroom. These can roughly be divided into: Use of TV, Use of Newspaper, Use of Radio, Use of Internet, and Use of Computer. In the past, teaching and learning process traditionally emphasized on memorizing and training. Nevertheless, the way of learning has changed now-a-days. The ICT, innovative tools and mass media sources are being widely used in the teaching and learning process today because learning from the textbooks and the teacher turns out to be insufficient. Using mass media sources in the classroom is a way of improving learners’ knowledge and tends to motivate them to pay more attention to study. It is also an element of development in language skills too.

We should comprehend the media, the messages they give, and their influence upon us, how to explore this abundant information and create an environment of learning with fun in the classroom where students splurge. Nowadays, thousands of websites have been created to assist in teaching and learning of not only English language but other subjects as well. There are many self exercises in the internet that cover vocabulary, grammar and reading comprehension. There are free websites for the ESL students to interact with ESL teachers who share the similar socio-cultural milieu. However, despite the impediments that an ESL teacher faces while integrating innovative tools in their class, admittedly it is the teacher who stands in the centre of classroom in teaching and learning process.

One of UNESCO's intervening endeavors is to ensure that every country, both developed and developing, have access to the preeminent educational facilities indispensable to get ready young people to play full roles in contemporary social order and to contribute to a knowledge nation. Maintaining a capacity to advise national governments on the use of technology in schools and, in particular, on the optimal balance, given confined circumstances, between ICT and older educational technologies and sustaining countries in developing educational software and materials that reflect their own national and regional cultures are key components of the Organization's strategy to achieve the *Education for All* goals.

The phrase multimedia can be used as a noun or as an adjective describing a medium as having multiple content forms. Multimedia, divulges electronic media devices used to store and experience multimedia content. This is distinguished from mixed media in fine art; by including audio, for example, it has a broader scope. The term "rich media" is synonymous for interactive multimedia. Hypermedia can be considered one particular multimedia application. Multimedia is media and content. Content used by it, is a transformation of miscellaneous content variety. The term multimedia is used in dissimilar to media which only use conventional forms of printed or hand-produced stuff. Multimedia, at large scale, is an amalgamation of text, audio, still images, animation, video, and interactivity content forms. Multimedia is by and large recorded and played, displayed or accessed by information content processing devices, such as computerized and electronic devices, but can also be part of a live presentation. Multimedia technology opens up a whole new world for the developer of computer-assisted learning (CAL) material. From the outside, the technical challenges of this new area seem quite different from the conventional

CAL development, but on closer inspection the techniques needed to design and develop multimedia applications are the same as those used to develop more conventional applications—problem definition, scope definition, top-down development, prototyping, structured walkthroughs, modularity and data dictionary/repository among others.

It subsequently proceeds to describe the steps of a methodology for the design and development of the system, to more conventional systems development processes. The paper concludes that while the technical side of multimedia is new and a knowledge of new devices and interfaces is required, and new skills of animation, film and audio need to be integrated, this new wine is still contained in old bottles, for the tried and tested methods of conventional system development are readily adapted to these new media. This paper outlines a hypothetical multimedia interactive role-playing CAL system (used to explore Just-in-Time inventory management).

Multimedia presentations may be analyzed in person on stage, projected, transmitted, or played locally with a media player. A broadcast may be a live or recorded multimedia presentation. Broadcasts and recordings can be either analog or digital electronic media technology. Digital online multimedia may be downloaded or streamed. Streaming multimedia may be live or on-demand. Multimedia games and simulations may be used in a physical environment with special effects, with multiple users in an online network, or locally with an offline computer, game system, or simulator. The various formats of technological or digital multimedia may be intended to enhance the users' experience, for example to make it easier and faster to convey information or in entertainment or art, to transcend everyday experience.

The term “multimedia” was invented by Bob Goldstein to endorse 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 (‘Washington Square’) Goldstein, the ‘Light works’ is the latest *multi-media* music-cum-visuals to debut as discotheque fare” (Richard Albarino, *Variety*, August 10, 1966). 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.

Throughout the prevailing forty years, the word has taken on miscellaneous connotations. In the late 1970s the term was used to express presentations consisting of multi-projector slide shows timed to an audio track. On the other hand, by the 1990s ‘multimedia’ took on its modern

denotation. Multimedia is seen as having great potential as a pedagogical tool (Daily, 1994), and some would argue that it is an almost essential component of technology-based training (Sims, 1994) but early reports suggest that it is a difficult and expensive technology to use well (Ellis and Sims, 1994). While some might agree with Clark's (1994) assertion that there is demonstrable proof that media attributes influence learning, and that most claims are the product of enthusiasm, perhaps a greater number would side with Reiser (1994) and his view that while new media are not essential delivery tools, they can ease the path of the learner. So while we could manage without multimedia, its existence opens up new learning possibilities that we would be wise not to ignore.

Superior levels of interactivity are made feasible by uniting multiple forms of media content. Online multimedia is increasingly becoming object-oriented and data-driven, enabling applications with collaborative end-user innovation and personalization on multiple forms of content over time. Examples of these assortment from multiple forms of content on Web sites like photo galleries with both images (pictures) and title (text) user-updated, to simulations whose co-efficient, events, illustrations, animations or videos are modifiable, allowing the multimedia "experience" to be altered without reprogramming. In addition to seeing and hearing, hepatic technology enables virtual objects to be felt. Up-and-coming technology relating illusions of taste and smell may also enhance the multimedia experience.

In the 1993 opening version of McGraw-Hill's *Multimedia: Making It Work*, Tay Vaughan affirmed "Multimedia is any combination of text, graphic art, sound, animation, and video that is delivered by computer. When you allow the user—the viewers 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*" (Vaughan Tay, 1993: 3).

The German language society, Gesellschaft für deutsche Sprache, decided to recognize the word's connotation and iniquitousness in the 1990s by awarding it the title of 'Word of the Year' in 1995. The institute summed up its rationale by stating "(Multimedia) has become a central word in the wonderful new media world" (Richard Albarino, *Variety*, January 1-7, 1996). There are suggestions that multimedia is fundamentally different from other computer-assisted learning techniques, and that accordingly design and production must be approached differently. Much of

this concentration on the unique character of multimedia is centered around two aspects; first the technological richness of the media, and second the broadness and diversity of the audience or users (True blood et. al., 1995) While these two aspects of multimedia design are significant, there is a danger that people will see them as a reason to reject traditional computer system design methodologies and to try to build multimedia methodologies from the ground up.

Across the world, 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.

Types of Multimedia to be Employed in Teaching :

Multimedia may be generally separated into two categories:

1. **Linear:** Cinema Presentation.
2. **Non-linear:** Interactivity, Computer Game, Computer Based Training, and Hypermedia.

Linear active content progresses exclusive of any navigational control for the viewer such as a cinema presentation. Non-linear content presents user interactivity to control progress as used with a computer game or used in self-paced computer based training. Hypermedia is an example of non-linear content. Multimedia presentations can be live or recorded. A recorded presentation may allow interactivity via a navigation system. A live multimedia presentation may allow interactivity via an interaction with the presenter or performer.

Word Usage & Context:

In view of the fact that media is the plural of medium, the term "multimedia" is a pleonasm if "multi" is used to describe multiple occurrences of only one form of media such as a collection of audio CDs. This is why it's essential that the word "multimedia" is used exclusively to describe multiple forms of media and content. The term "multimedia" is furthermore ambiguous. Stagnant content may be considered multimedia if it contains both pictures and text or may be considered interactive if the user interacts by turning pages at will. Books may also be considered non-linear if the pages are accessed non-sequentially. The term "video", if not used

exclusively to describe motion photography, is ambiguous in multimedia terminology. Video is often used to describe the file format, delivery format, or presentation format instead of “footage” which is used to distinguish motion photography from “animation” of rendered motion imagery. Multiple forms of information content are often not considered modern forms of presentation such as audio or video. Similarly, single forms of information content with single methods of information processing (e.g. non-interactive audio) are often called multimedia, perhaps to distinguish static media from active media.

We might draw a parallel here with end-user computing systems, when end-users are experiencing all the development problems that computing professionals have encountered and solved over the years—structured coding, effective testing, documentation and the like. Computer professionals learnt the hard way what techniques worked and which ones did not, and it is a waste for end-users to retread the path and to learn the hard way. Similarly in multimedia systems there is much to be gained for adopting as a basis the traditional computer systems development techniques, and then to recognize the areas that need modification in the light of experience and to refine the methodology accordingly.

Just because the technology is different does not mean that everything else must be different. If traditional computer system development methodologies are readily adapted to multimedia, then in the huge pool of computer professionals there exist substantial resources for accelerating the pace of multimedia development.

Usage:

Commercial presentations may coalesce all forms of media content. Virtual reality uses multimedia content. Applications and delivery platforms of multimedia are virtually limitless. Multimedia finds its application in various areas including, but not limited to, advertisements, art, education, entertainment, engineering, medicine, mathematics, business, scientific research and spatial temporal applications. Quite a lot of examples are:

Creative Industries:

Creative engineering use multimedia for a multiplicity of rationale ranging from fine arts, to entertainment, to commercial art, to journalism, to media and software services provided for any of the industries listed below. An individual multimedia designer may cover the spectrum during their line of business.

Commercial:

To a great extent of the electronic old and new media used by commercial artists is multimedia. Stimulating presentations are used to grab and keep attention in advertising. Business to business and inter-office communications are often developed by creative services firms for advanced multimedia presentations beyond simple slide shows to sell ideas or live-up training. Commercial multimedia developers may be hired to design for governmental services and non-profit services applications as well.

Entertainment and Fine Arts:

Multimedia is profoundly brought into play in the entertainment industry, especially to widen extraordinary properties in movies and animations. Multimedia games are a popular pastime and are software programs available either as CD-ROMs or online. Some video games also use multimedia features. Multimedia applications that allow users to actively participate instead of just sitting by as passive recipients of information are called *Interactive Multimedia*. In the Arts there are multimedia artists, whose minds are able to blend techniques using different media that in some way incorporates interaction with the viewer. One of the most relevant could be Peter Greenaway who is melding Cinema with Opera and all sorts of digital media. Another approach entails the creation of multimedia that can be displayed in a traditional fine arts arena, such as an art gallery. Even though multimedia exhibit objects may be unpredictable, the survivability of the content is as burly as any traditional media. Digital video recording material may be just as durable and infinitely reproducible with wonderful copies all occasions.

Education:

In Education, multimedia is bringing into play to fabricate 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. Learning theory in the past decade has prolonged spectacularly for the reason that of the establishment of multimedia. A number of lines of research have developed (e.g. Cognitive load, Multimedia learning, and the list goes on). The possibilities for learning and instruction are almost continuous.

Distinct 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. The idea of media convergence is also becoming a major factor in education, particularly higher education.

Broadsheet companies all over are also trying to embrace the new phenomenon by implementing its practices in their work. At the same time as some have been deliberate to come around, other major newspapers like *The New York Times*, *USA Today* and *The Washington Post* are setting the precedent for the positioning of the newspaper industry in a globalized world.

Engineering:

Software engineers may use multimedia in Computer Simulations for anything from leisure to teaching such as military or industrial training. Multimedia for software interfaces are often done as collaboration stuck between creative professionals and software engineers.

Industry:

Multimedia, in industrial sector also, is used as a way to help present information to shareholders, superiors and coworkers. Multimedia is furthermore supportive for providing employee training, advertising and selling products all over the world via virtually unlimited web-based technology

Mathematical and Scientific Research:

In mathematical and scientific research besides, multimedia is principally exploited for modeling and simulation. For example, a scientist can look at a molecular model of a particular substance and manipulate it to arrive at a new substance. Representative research can be found in journals such as the Journal of Multimedia.

Medicine:

Here in medicine, doctors obtain training by coming across a virtual surgery or they can simulate how the human body is affected by diseases spread by viruses and bacteria and then develop techniques to prevent it.

Document Imaging:

Text imaging is a technique that takes hard copy of an image/document and converts it into a digital format (i.e., scanners).

Configuration Information in a Multimedia Form:

Multimedia corresponds to the intersection of text, pictures, video and sound into a single form. The power of multimedia and the Internet lies in the way in which information is coupled. Multimedia and the Internet have need of an absolutely latest approach to writing. The approach of writing that is appropriate for the 'on-line world' is highly optimized and designed to be able to be quickly scanned by readers (Stewart, C. and Kowaltzke, A. 1997: 102).

A good site must be eye-catching and pioneering in its design, function in terms of its rationale, easy to navigate, frequently updated and fast to download (Jennifer Story, Next Online, 2002). When users view a page, and they can only view one page at a time. Consequently, multimedia users have got to create a 'mental model of information structure' (Lynch, P.). Patrick Lynch, author of the *Yale University Web Style Manual*, states that users demand predictability and structure, with comprehensible functional and graphical continuity between the assortment of components and subsections of the multimedia production (<http://en.wikipedia.org/wiki/Multimedia>). In this way, the home page of any multimedia production should always be a landmark, able to be accessed from anywhere within a multimedia piece.

Conferences:

There are a great number of multimedia conferences, the two main scholarly scientific conferences being:

- ACM Multimedia;
- IEEE ICME, International Conference on Multimedia & Expo.

Multimedia contents are Text: Text documents are those documents which are representing the written information. There are two types of text documents one is text documents (plain and Rich text) and other is Hypertext (Text which contain links).

Overall Project Management:

A critical feature in multimedia development is the sizing of the finished product to fit says a CDROM — so much video, so much audio, and so many programs, just as PC software must control and balance ROM, RAM and disk storage and meet desired response times. Interactive multimedia projects can rarely be carried out by a single individual. Teams must be built and staffed with the large range of skills required — educators, animators, film makers, scriptwriters, programmers and so on (Pearce, Riddle and Nott, 1994). The range is perhaps greater than in

many computer systems with their analysts and programmers, but in other computer systems we need database administrators, data communications experts, process control experts, knowledge engineers and the like. As with many computer system developments, we need more than the tool and some perspiration, we need inspiration and specialization. So CAL software requires educators and instructional designers, and desktop publishing requires editors.

Any heterogeneous team will present problems of differences in perspective, failure to understand/Communicate; desire to be the central focus and differences in motivation. Multimedia projects present a particular problem with the coming together of two highly creative groups—computing people and media people, both of whom like to retain artistic/creative control of their activities and do it their way. Teams will not succeed unless the creative energies of both groups are harnessed together rather than competing for the centre of the stage. For this to happen, there must be a sharing of ideas and a mutual respect for each group's special skills and experience. So we are not suggesting that IT people do it all, for the presentation might dominate over content (Smoliar, 1994), but to recognize that in developing their separate methods and traditions, computing people and creative arts people have been treading down parallel paths, and there is now the need to merge the two methodologies before moving to the fore.

The contemporary systems forecaster ought to be capable of dealing with an ever mounting set of methodologies. From near the beginnings where the flowchart was perhaps the only tool used, today there is a great variety of tools and techniques — SSADM, Prototyping, Soft Systems, CASE and the like — from which a suitable choice must be made at each step in the development process. Multimedia simply adds a few more options and variations on tried and tested methods. To ignore this rich collection of existing methods when developing multimedia applications is to repeat in great part the lessons of history. Recognition and exploitation of the similarity will bring two benefits. First, it will encourage traditional computer systems designers to engage with multimedia, and second, it will provide a resource pool that educators, artists and communicators can tap into for sustain with multimedia enhancement.

Accordingly, the current study is an excellent endeavor in a series of successfully integrating the new technologies such as multimedia, and e-learning in classroom teaching and learning process. This pursues two key purposes. The first is to specify an introduction of innovative tool in

classroom teaching and learning process that is in line with current international trends. The second is to propose innovative techniques of professional development for teachers necessary to implement the specified ICT in teaching successfully. In addition, it reveals the practical and realistic approach to Information and Communication Technology and teacher development that can be implemented quickly and cost effectively, according to available resources.

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