EDIFICATION OF MULTIMEDIA RESOURCES: ALIGNING TECHNOLOGY FOR STUDENT EMPOWERMENT

By

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ABSTRACT

Multimedia offers exciting possibilities for meeting the needs of 21st century learners. Multimedia learning can be defined in a number of ways. Multimedia learning is the delivery of instructional content using multiple modes that include visual and auditory information and students' use of this information to construct knowledge. Today's students are very different from even their recently graduated peers. These students are digital natives. They live in a world in which digital technology is part of the texture of their daily lives. They have never known a world without technology. Technology is their native language and they expect to use technology in school. While some students have greater access to technology than others, computers with Internet access are now nearly universally available in schools. Internet-enabled computers and cell phones are pervasive outside of school. Use of technology by 5-18 year olds is at its highest level and is projected to increase. This increased reliance on technology combined with brain processing offers enormous potential for instruction. Research has shown us that the brain processes information using two channels - visual and auditory. When information is presented using both channels, the brain can accommodate more new information. By taking advantage of this multimodal processing capability and technology-based tools, we can dramatically enhance student learning through multimedia instruction. This document is intended to provide an introduction to the Merlot community. The paper will collect background information of multimedia, describe its usage, how it functions and key features, and provide further help to educators for integration of multimedia resources in the teaching learning process.

Keywords: Multimedia, Technology, Learning, School Education, Hypermedia, Interactive Multimedia Instruction, World wide web

INTRODUCTION

The education of our children has always been emotive and when the mass media is added to the mix, volatility is inevitable. A 21st century teacher has the opportunity to engage their students like never before. Multimedia resources, such as interactive online games, video clips, podcasts and data sets, allow the teacher to address a range of learning styles and meet the needs of every student. Whether the teacher is showing video to the entire class or overseeing individual online interaction, multimedia resources can provide a gateway to a whole new level of learning for students.

Multimedia Resources offer,

- Portability
- Flexibility
- Individualized Learning
- Collaboration and Community Building
- A Broader View of the World

1. Integrating Multimedia Resources into Teaching

1.1 Before Class

Preview the multimedia resources to make sure they are appropriate and the goals of the lesson are met. When using video, select segments that are most relevant to the curricular topic addressed in the lesson. A brief clip can spark interest and/or demonstrate a specific concept. Prepare the classroom environment and electronic equipment ahead of time. Choose lighting and arrange seating to enhance the learning experience. When using the Internet, choose sites that are easy to navigate and factor in the time it will take students to access information

on the sites. Bookmark each site students will use on each workstation or computer (Mohanty, 2001).

1.2 Provide a focus for students' interaction with the multimedia resource

It may be a set of questions to answer, a particular topic on which to take notes, a perspective from which to assess the content, or another task that students must work toward completion. When using video, view one segment at a time and direct the learning experience. Pause frequently to control the pace and amount of information, check for comprehension, solicit interpretations and predictions, clarify important points, and provide opportunities for students to make connections to other topics or events. Consider viewing the same segment several times to increase critical thinking, analysis, observation and listening skills. When using the Internet, clearly demonstrate what students are expected to do during the lesson and monitor students closely while they are online to keep them on task.

1.3 After the Lesson

Provide opportunities for small or large group discussion that looks in-depth at what students have just viewed. Follow the discussion with a hands-on, interactive culminating activity that allows students to apply, reinforce, and demonstrate what they have learned during the lesson.

2. Understanding Multimedia Learning

Multimedia can have many definitions that include a computer system perspective. Multimedia means that computer information can be represented through audio, video, and animation in addition to traditional media (i.e., text, graphics/drawing, and images). A good general working definition for this module is, Multimedia is the field concerned with the computer controlled integration of text, graphics, drawings, still and moving images (Video), animation, audio, and any other media where every type of information can be represented, stored, transmitted and processed digitally (Kulkarni, 1986).

2.1 Multimedia Application definition

A Multimedia Application is an application which uses a collection of multiple media sources e.g. text, graphics, images, sound/audio, animation and/or video.

2.2 Hyper Text and Hyper Media

Hypertext is a text which contains links to other texts. The term was invented by Ted Nelson in 1965.

2.3 Hyper Text Navigation

Traversal through pages of hypertext is usually Non-linear. This has implications in layout and organisation of material and depends a lot on the application at hand.

2.4 Hypermedia

Hyper Media is not constrained to be text-based. It can include other media, e.g., graphics, images, and especially the continuous media – sound and video.

2.5 Example Hypermedia Applications

The World Wide Web (WWW) is the best example of a hypermedia application. PowerPoint, Adobe Acrobat (or other PDF software), Adobe Flash and many others.

2.6 Multimedia Applications

Examples of Multimedia Applications include; World Wide Web Multimedia Authoring, e.g. Adobe/Macromedia Director, Hypermedia courseware, Video-on-demand, Interactive TV, Computer Games, Virtual reality, Digital video editing and production systems.

2.7 Multimedia Systems

A Multimedia System is a system capable of processing multimedia data and applications. A Multimedia System is characterized by the processing, storage, generation, manipulation and rendition of Multimedia information.

2.8 Characteristics of a Multimedia System

A Multimedia system has four basic characteristics: viz., Multimedia systems must be computer controlled. Multimedia systems are integrated. The information they handle must be represented digitally. The interface to the final presentation of media is usually interactive. (Daniel, 2005)

3. Some Multimedia and Educational technology endeavours in India

In this modern world, the educational technology has spread everywhere and in every field and has revolutionized human life. It is able to change the whole environment around him. It is also able to change life and outlook. The educational technology in education has also

emerged as a result of new researches in the field of education. Modern techniques are being developed. India taken various programmes in the field of Educational technology as follows.

3.1. Educational technology programme or project

The government of India undertook an educational technology project in the central sector in the fourth plan in 1972 so as to envisage the stimulation and promotion of an integrated use of mass media and instructional technology at various levels of education. The aim of this project is to bring about qualitative improvement, accelerate the rate of expansion and make instruction more interesting (Mukhopadhyay, 1990).

3.2. National Council of Educational Research and Training (NCERT) and Educational technology programmes

3.2.1 Multi-media package

The centre is able to develop the multi-media package which involves television programmes, radio programmes, activity guides, enrichment materials and tutorials for in-service training of primary teachers in science teaching.

3.2.2 Data bank and software bank

The nursery rhymes collected in four languages by the Indian council for child welfare were set to music and recorded on tapes.

3.2.3 Radio

Case studies on the usage of school broadcast programmes in Jaipur, Jalgaon, and many other places are also undertaken.

3.2.4 Directory of personnel

Director of personnel involving in the field of Educational technology has been published.

3.2.5 National seminar on Educational technology

In June 1976, a National Seminar on Educational technology was conducted in Mysore. On conclusion of the seminar, the director, NCERT appointed a committee for preparing a note on the framework for the development of Educational technology in India which has since been prepared.

3.2.6 Evolution of television programmes

The Ministry of Education carried out evaluation studies of television programmes broadcasted to primary schools under Satellite Instructional Television Experiment (SITE).

3.2.7 Open school

A sub-committee was setup to explore the possibility of starting an open school project. The sub-committee was in favour that an open school would be highly suitable and desirable to meet the educational needs of the age group 14 plus.

3.2.8 Programmes of Educational technology cells / State Institute of Technology

Centre of Educational technology cells / State Institute of Technology have been set up in almost all the States of India. These cells are involved in planning educational broadcasts.

3.2.9 Satellite Instructional Television Experiment (SITE) programme

The SITE programme was undertaken in the country in August 1975 for a period of one year to telecast programmes in six States namely Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh, Orissa and Rajasthan. Workshop on Educational broadcasting was held, in New Delhi during December 1980 as part of UNESCOs Asian programme of educational innovation for the development of National guidelines for educational broadcasting.

3.2.10 Indian National satellite

With the operation of INSAT in 1983, live television programmes can be seen in all parts of the country. INSAT is used for programmes of enrichment of students in higher studies, enrichment of teachers, increasing agriculture production, restricting the population growth.

3.2.11 Central Institute for Educational technology (CIET)

The CITE was able to develop software materials relevant to educational needs, creates competencies and trained manpower through training, conducts research, and evaluation of the systems, programmes and materials in Educational technology. Indira Gandhi National Open University (IGNOU), Delhi was established in 1985.

4. Categorization of Multimedia

Multimedia may be broadly divided into linear and non-linear categories. Linear active content progresses often without any navigational control for the viewer such as a cinema presentation. Non-linear uses interactivity to control progress as with a video game or 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 (Sampath, 1992).

5. Major characteristics of multimedia

Multimedia presentations may be viewed by 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 analogue or digital electronic media technology. Digital online multimedia may be downloaded or streamed. Streaming multimedia may be live or on-demand (Locatis, 1984). 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.

Enhanced levels of interactivity are made possible by combining 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 range from multiple forms of content on Web sites like photo galleries with both images (pictures) and title (text) user-updated, to simulations whose co-efficients, events, illustrations, animations or videos are modifiable, which are allowing the multimedia "experience" to be altered without reprogramming. In addition to seeing and hearing, Haptic technology enables virtual objects to be felt. Emerging technology involving illusions of taste and smell may also enhance the multimedia experience. (Bainbridge, 2006)

6. Multimedia and Instructional Media History

The term multimedia was coined by singer and artist Bob Goldstein to promote the July 1966 opening of his Light Works at L'Oursin show at Southampton, Long Island. Goldstein was perhaps aware of a British artist named Dick Higgins, who had two years previously discussed a new approach to art-making which he called as intermedia. Since media is the plural of medium, the term "multimedia" is used to describe multiple occurrences of only one form of media such as a collection of audio CDs. This is why it's important that the word multimedia is used exclusively to describe multiple forms of media and content. The term multimedia is also ambiguous. Static content (such as a paper book) 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 as modern forms of presentation such as audio or video. Likewise, 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 (Kumar K.L., 1996). During 1950s to mid-1960s, we witnessed the Growth of Instructional television. Later, Computer-Assisted Instruction (CAI) research started in the 1950s, became popular in the 1980s a few years after computers became available to the general public. Since 1990s the internet offered opportunities to train many people from long distances. Desktop simulation gave advent to levels of Interactive Multimedia Instruction (IMI). AD 2000 onwards on-demand training moved to people's personal devices; social media allowed for collaborative learning.

7. Multimedia in Education - Recommendations

In Education, multimedia is used to produce Computer-Based Training courses (CBT) and reference books like Encyclopaedia 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 the combination of education with entertainment, especially multimedia entertainment.

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 (Kevin, 2004).

Educators need to consider how to perfect the education system to improve the students' life skills. Therefore an efficient way should be used to make the class vivid. Multimedia teaching will bring students 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. In many circumstances teachers don't have to be there, students will learn by themselves in the class. More importantly, teachers will have more approaches to stimulate students' passion of learning (Schroeder, 2010).

8. Managing Future Multimedia Collections

Traditional libraries, digital or not, use meta-data, catalogues and classification systems to facilitate access to documents. Search engines such as Google have enhanced this process by indexing and searching the entire documents to give access to the meta-data, i.e., the link to the document. This project intends to go a step further by providing visual access modes, For example, through visual search boxes into which images can be dropped. Those visual access modes will be in addition to traditional meta-data search in libraries and full-text search boxes. As such, we amalgamate digital library functionalities given with content-based multimedia access. As applications evolve over time, their functionality and user interface complexity tend to increase substantially. User interfaces do not generally offer different approaches for people having different individual characteristics (Novice, Intermediate, or Professional). Adaptable and responsive interfaces are important for the search and browse of media libraries (Mcluhan, 1965).

9. Purpose of Multimedia in the Classroom

By incorporating multimedia in their instruction, teachers can capture attention, engage learners, explain difficult concepts, inspire creativity, and have fun. However, there are many tools available and many ways to use those tools. A teacher who is searching for a technology tool to accomplish certain learning goals or outcomes, can easily be overwhelmed (Park, 2007).

Following is a list of rationale for using multimedia in classroom.

- Facilitate and develop a community of learners through online ice-breaker activities.
- Help students visualize difficult concepts or procedures more easily
- Scaffold learning through activities enhanced by videos and online games
- Make language and culture come alive
- Provide a menu of authentic assignment options
- Enhance accessibility through the use of powerful multimedia software tools.
- Enable visualization of concepts and their connections
- Encourage collaboration and feedback
- Make learning situated and personal
- Help students document and present their learning through authentic assessments.

10. Advantages of implementing multimedia in the classroom include

- Motivation : This is important as we have learned that

we must first engage the attention of our students before they are ready to learn.

- Learning styles addressed : Multimedia allows teachers to address various learning styles in the classroom. Students can see, hear, and imagine what things feel like as multimedia is used to bring a subject to life.
- Technology standards addressed : Technology is an important aspect of life today. Students must be ready to compete in a highly technological world.
- Access to limitless resources for teaching and learning : Teachers are no longer limited to textbooks as vast amounts of knowledge and teaching ideas may be explored.
- Student centred learning : Students will show accountability for learning when collaborative activities or project based learning are implemented through technology. (Torstein, 2003)

Conclusion

Educational technology is being used for achieving the macro and micro objectives of education in our country. It has caused a revolution in the field of education. In education, multimedia can be used as a source of information. Students can search encyclopaedias such as Encarta, which provide facts on a variety of different topics using multimedia presentations. Teachers can use multimedia presentations to make lessons more interesting by using animations to highlight or demonstrate key points. A multimedia presentation can also make it easier for pupils to read text rather than trying to read a teacher's writing on the board. Programs which show pictures and text whilst children are reading a story can help them learn to read; these too are a form of multimedia presentation. A teacher can easily align instructional goals and empower instruction through using appropriate multimedia tools. It takes some planning, time, and expenditures, but in the long run, students will reap many benefits.

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