



**SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION**  
**FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA**



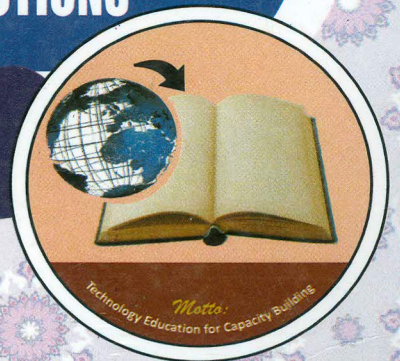
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**ENHANCING INFORMATION MANAGEMENT,  
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MULTIMEDIA AND HYPERMEDIA INSTRUCTIONS**

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## Enhancing Library and Information Technology Education through Multimedia Instructions

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### Abstract

*This study examined the definition of multimedia, use of multimedia to access knowledge and teaching, multimedia system for library and information technology education, advantages of multimedia instructions in education and challenges of using multimedia instructions to enhance education. The use of multimedia instructions in library and information Technology education has enhances lecturers' ability to simulate final feedback and assist students in applying knowledge learned from textbooks, journals and encyclopedias thereby eliminating the deficiency in traditional teaching methods.*

### Introduction

The use of multimedia to access knowledge and teaching has tremendously enhanced learning in Universities. The advent of multimedia technologies has changed the way educators teach and students learn in higher institutions worldwide. Accordingly, Neo & Neo (2000) noted that 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. 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 in Library and Information Technology Education (LITE). The use of multimedia as a platform for instructions provides user- friendly yet power-packed learning environment that is self-paced, learner controlled and individualized. The use of multimedia technology enables the creation of environments in which constructivist learning can take place. Accordingly to Ogunlana, (2012), apart from enhancing learning, multimedia provides learning guidance. Interactive multimedia is quickly becoming a media of choice for learning and information distribution throughout the nation and the world. He further advised researchers and lecturers to use interactive multimedia applications in the presentation of concepts where practicable, applicable, and valid to better communicate learning concepts to students using new and unique technologies.

### Definition

Natarajan (2006) defined multimedia as combination of text, graphics, art, sound, animation and video with links and tools that let the teacher/learner navigate, interact and communicate with the computer. They are integrated and linked together in a way that offers users the ability to browse, navigate and analyze these materials through various searching and indexing features. Multimedia has the capacity to deliver large amounts of materials in multiple forms and to deliver them in an integrated environment. These materials can be called up instantly for cooperative learning, critical thinking, discussions, problem solving and self-study. Several definitions exist, but the authors view multimedia as those resources used for instructions which include one or more media such as graphics, video, animation, image and sound in addition to textual information. Multimedia systems are computer controlled, integrated, information content must be represented digitally and the interface to the final presentation of media is usually interactive.

### Multimedia System for Library and Information Technology Education

The process of knowledge acquisition becomes more efficient when the students experience an event through a multimedia simulation. Multimedia technology empowers the educational process by means of increased interaction between lecturers and the students. Taking considerations of pedagogical strengths of Multimedia instructions, lecturers and students enjoy endless possibilities of quality teaching and learning. Hence, Malik and Agarwal (2012) noted that Multimedia has overcome the barriers of time and space and provides evidence to be accepted as an anytime and anywhere tool for educating multi-disciplinary masses. However, to achieve the desired impact on enhancing library and information technology education, multimedia must have the following features:

- i. **Very High Processing Power** — to deal with large data processing and real time delivery of media.
- ii. **Special Hardware/Software needed** – for example, RAID technology.
- iii. **Large Storage and Memory** — large storage units, large memory, large Caches and high speed buses for efficient management.
- iv. **Data Representations** — to support multimedia and allow for **compression/decompression in real-time**.
- v. **Multimedia Capable File System** — to deliver real-time media, for example, **Video/Audio Streaming**.
- vi. **Network Support** — Client-server systems common as distributed systems common.
- vii. **Efficient and High Input and Output** — to the file subsystem to allow for real-time recording as well as playback of data, for example, Direct to Disk recording systems.
- viii. **Efficient Operating System** — to allow access to file system and process data easily and efficiently. Needs to support direct transfers to disk, real-time scheduling, fast interrupt processing, I/O streaming etcetera
- ix. **Good Software Tools** — user friendly tools are needed to handle media, design and develop applications.

#### **Multimedia system for Library and Information Technology Education must have the following important hardware and software components**

- i. **Capture devices** — Video Camera, Video Recorder, Audio Microphone, Keyboards, mice, graphics tablets, 3D input devices, tactile sensors, VR devices. Digitizing Hardware
- ii. **Storage Devices** — Hard disks, CD-ROMs, DVD-ROM, etc
- iii. **Communication Networks** — Local Networks, Intranets, Internet, Multimedia or other special high speed networks.
- iv. **Computer Systems** — Multimedia Desktop machines, Workstations, MPEG/VIDEO/DSP Hardware
- v. **Display Devices** — CD-quality speakers, HDTV, SVGA, Hi-Res monitors, Colour printers etc.

#### **Advantages of Multimedia Instructions in Education**

In using multimedia instructions in education, when lecturers allow the students to control what and when these elements are delivered, it is interactive multimedia, and when lecturers provide a structure of linked elements through which the learner (students) can navigate, interactive multimedia becomes hypermedia. If done properly, interactive multimedia excels in leaving lasting impressions in the teaching/learning process. Multimedia applications incorporate a full range of available facilities in order to enhance the communication between the author/creator of a multimedia application and the reader. According to Malik & Agarwal (2012), multimedia facilitates mastering basic skills of a student by means of drill and practice. It helps in problem solving by means of learning by doing, understanding abstract concepts, provide enhanced access for lecturers and students in remote locations, facilitate individualized and cooperative learning, helps in management and administration of classroom activities and learning content, and simulate real life problem handling environments. Similarly, Aloraini (2012) noted the advantages of multimedia instructions:

- 1) They make the reading process a dynamic one instead of the written presentation of the texts printed in the book
- 2) Presenting different drawings & pictures supports the clarification of ideas & communication of information.
- 3) Moving easily from a presented subject to another provides a good chance for questions & discussions.
- 4) Using different presentations like video clips along with maps or other kinds of presentations help to get the information closer to reality. Adding music makes the idea clearer and it attracts the attention of the learners
- 5) They rise the attention & interaction between students & the educational subject 6) They comprise the elements of amusement & suspense
- 7) They are graded according to the learner's abilities from easy to difficult ones
- 8) They provide lecturers with a new educational style & encourage curiosity
- 9) They help lecturers & learners look into topics from a broader perspective as each topic comprises enormous information

- 10) They guide learners to peer learning
- 11) They are concerned with providing simultaneous feedback
- 12) They help learners remember & transfer their knowledge
- 13) They support the user's work & innovation, which makes the possession of a computer a necessity for both the student & the teacher.

The advantages of Multimedia instructions above further justify using it enhances library and information technology education. The use of multimedia instructions in teaching library and information technology courses such as, library automation, audiovisual materials, reference services and library security makes the idea clearer and attracts the attention of the students. In the same vein, Matusiak, (2013) study confirms that images and multimedia can indeed play a positive role in engaging students with the class material and influencing their attitudes. It also points out a unique role of video clips in providing context for lecture materials. The use of visual resources in the classroom played positive roles as it addressed the individual differences in students' cognitive styles, helped students remember the material provided a rich description of the subjects under study for a learning environment that is enhanced by technology. Digital technology has enabled faster and easier creation and reproduction of visual and multimedia resources and their integration into the teaching and learning processes. Malik & Agarwal (2012). There are two ways, multimedia education is imparted to the students by various universities / institutions:

- a) Teaching methodologies of multimedia content creation, which include imparting hands-on skills of software packages used for creation and authoring of multimedia content, and
- b) Employing interactive multimedia content and technology for effective teaching, which include the various methods of engaged learning like multimodal interactive information delivery; and personalized and enhanced anytime-anywhere access of the content.

### **Challenges of Using Multimedia Instructions to Enhance Education**

*Deutsche (2009)* identify five major areas where challenge occurred with the multimedia as follows:

#### **i. Technical issues surrounding multimedia**

A major challenge when using technology is the technical problems. These problems could frustrate lecturers to the point where they do not want to use it. A difficulty with addressing this challenge is that it is not always known whether the technical issues reside at the development stage or the school facility.

#### **ii. Location of the computers**

There are different situations in regards to computer access. By understanding where lecturers primarily use computers for the multimedia software, it will be easier to design the multimedia to incorporate the various settings. There are instances where lecturers go into computers labs or only have access to limited computers in their lecture halls. The large number of lecturers using computer labs means that they have to leave their lecture halls to use the multimedia.

#### **iii. The structure of professional development related to the multimedia**

Many lecturers first exposure to a curriculum is during professional development. Lecturers' exposure to the multimedia during training may have an influence on how lecturers use the multimedia in the classrooms and whether they use it at all. During professional development, lecturers are introduced to the curriculum and learn how to present the material to students. Many of the trainers do demonstrations or discuss the multimedia verbally to lecturers even though this may not be how they want the lecturers to use the multimedia. During professional development, when lecturers are shown the multimedia in the way it would be best Presented (i.e. small groups, individual, etc.), they are more likely to present it to their students in that format. The lecturers are more likely to feel comfortable with the multimedia if they have gone through training about not only the material, but also how to present it.

#### **iv. Quality of the multimedia**

One of the major reasons that technology is not being fully implemented in the Universities is because of the quality. Lecturers need to view multimedia as good quality before they will implement it. When creating multimedia curriculum, it is important to get feedback about the quality from the customers who are using it.

The challenges enumerated above are tackled by departments that really want to enhance teaching and



learning. The authors encourage the use of multimedia instructions as it enhances education. With the advent in powerful computer graphics and visualization technologies, lecturers have the ability to supplement verbal modes of instruction with pictorial modes of instruction. Advances in computer technology have enabled an explosion in the availability of visual ways of presenting material, including large libraries of static images as well as compelling dynamic images in the form of animations and video.

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