NATIONAL OPEN UNIVERSITY OF NIGERIA

FACULTY OF EDUCATION

COURSE CODE: LIS 219

COURSE TITLE: MULTIMEDIA APPLICATION IN LIBRARIES AND INFORMATION CENTRES

**COURSE
GUIDE**

LIS 219
MULTIMEDIA APPLICATION IN LIBRARIES AND INFORMATION CENTRES

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INTRODUCTION

Welcome to **LIS 219: Multimedia Application in Libraries and Information Centres.** LIS 219 is an elective course for 200 level students. It is a 2-unit course that has minimum duration of one semester. The course is made up of five Modules and 11 units.

LIS 219 examined the concept of multimedia, the rationale for using multimedia, competences and skills needed by multimedia librarians, types of multimedia systems, multimedia evaluation and challenges faced in multimedia applications, multimedia applications in information service delivery, multimedia presentation model and designing of an effective multimedia presentation.

It is important that you read through this course guide because it will expose you to what to expect in the course and how to work through the course. The need for online facilitation/discussions is emphasized in this course guide.

WORKING THROUGH THIS COURSE

LIS 219: **Multimedia Application in Libraries and Information Centres** is to equip you with knowledge and skills of multimedia that will enable you know how to select suitable multimedia resources, software and multimedia systems for the library. The ultimate objective therefore, is to expose you to all necessary information and skills needed to manage a multimedia library and information centre. Self-assessment exercises are provided to give you direction and help you to focus on main issues. Examination will be taken at the end of the course. Ensure that you go through all the major components of the course.

AIMS

The aim of this course is to expose you to all necessary knowledge and skills to enable you develop multimedia resources, handle basic challenges in multimedia technologies and effectively use multimedia in information service delivery.

OBJECTIVES

At the end of this course, you should be able to**:**

- Define Multimedia
- Give a brief history of multimedia
- Identify multimedia elements
- List the types of multimedia
- Explain reasons why multimedia is needed in any learning environment especially in libraries and information centres.
- List the disadvantages of multimedia
- Discuss ways multimedia can be applied in libraries
- Identify other fields where multimedia has been applied
- Discuss the various ways multimedia can be applied in digital libraries
- Explain the various components of a hypertext catalogue
- Discuss the various library services that can be offered in a multimedia digital library.
- List the various competencies/ skills of a 21st century librarian
- Explain the various methods of acquiring the needed skills of 21st century librarian
- Define and identify the key properties of a multimedia system
- Identify the various types of multimedia systems
- Evaluate any multimedia system of your choice.
- Differentiate between formative and summative evaluation.
- Discuss limitation/ challenges that are rooted in the multimedia technology itself.
- Identify limitation/ challenges that are rooted in skill manpower
- Identify Multimedia effects
- Explain different ways of authoring presentations
- List the various authoring styles

- Identify the different features of a good presentation
- List the various software packages for presentation.
- Discuss the factors to consider in preparing an effective multimedia

STUDY UNITS

This course comprises 5 modules and 11 study units. In each of the units, there are self-assessment exercises to ascertain the level of achievement of instructional objectives. These self-assessment exercises are generally meant to test how you have been able to achieve the previously stated objectives.

Module 1: Definition and Concept of Multimedia

Unit 1: The Concept, Types and Features of Multimedia Technologies

Unit 2: Rationale for Using Multimedia Technologies

Module 2: Multimedia Technologies Application in Libraries and Information Centres

Unit 1: Use of Multimedia Technology in Libraries

Unit 2: Multimedia Use and Digital Libraries

Module 3: Multimedia Application in Libraries and Information Service Delivery

Unit 1: Internet, Multimedia and Information Service Delivery

Unit 2: Competencies and Skills of Multimedia Libraries

Module 4: Multimedia Systems

Unit 1: Types of Multimedia Systems

Unit 2: Evaluation of Multimedia Systems

Unit 3: Challenges/ Limitations of Multimedia Technologies in Library and Information Services in Nigeria

Module 5: Multimedia Presentations, Design and Production Techniques

Unit 1: Multimedia Presentation Models

Unit 2: Designing a Multimedia Presentation

PRESENTATION SCHEDULE

The course highlights the important dates that you should take note for early and timely completion of the course and also to submit the Tutor-Marked Assignments.

ASSIGNMENT FILE

There are at least twenty-one assignments in this course, that is, at least one assignment per unit. The assignment file contains all the works you are to submit to your tutor/facilitator for marking. Your assignments are as important as your examinations and they carry 30% of the scores earmarked for the course.

ASSESSMENT

There will be two categories of assessment in this course. These include different forms of assignments and written examination at the end of the course. In total, assignments will carry 30% while the final written examination will carry 70%.

TUTOR MARKED ASSIGNMENT (TMA)

The 30% is for TMA, which is a continuous assessment component of the course. You are expected to attempt at least 3 TMAs before the end of the course. Ensure that TMA is submitted to your facilitator on or before the deadline in the presentation schedule.

FINAL EXAMINATION AND GRADING

A 3-hour end-of-the-course examination for LIS 219 will be done and it carries 70%. The final exam will cover all the areas discussed in the course materials. You are expected to form discussion group to address grey areas as this will promote cross-fertilization of ideas.

COURSE MARKING SCHEME

Assessment	Marks
Assignment 1-21 (best 3 out of all the assignment submitted)	Three assignment marked, each 10% totalling 30%
Final Examination	70% of Overall Course Score
Total	100% of Course Score

SUMMARY

This course will bring you to the importance of multimedia application in libraries and information centres. At the end of the course you will achieve the objectives if you follow the instructions and do what you are expected to do.

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UNIT 1: THE CONCEPT, TYPES AND FEATURES OF MULTIMEDIA TECHNOLOGIES

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1.0 INTRODUCTION

It is now a common practice to use multimedia to enhance teaching, learning and research. In this module, you will be exposed to the different types and features of multimedia technologies to enable you identify them and know the appropriate one to use at any given time. In this unit you shall be introduced to the concept of multimedia technologies. The various definitions of multimedia will be given. You will also learn the different elements and types of multimedia technologies.

2.0   OBJECTIVES

At the end of this unit, you should be able to:

- Define Multimedia
- Give a brief history of multimedia
- Identify the elements of multimedia
- Explain the types of multimedia

3.0   MAIN CONTENT

3.1   The Concept of Multimedia

The word multimedia combines two words "Multi" and the second word is "Media" Multi which is the first word means several or multiple while media is the channel for storing or transmitting information. The plural form of medium is media. Multimedia is the combination of different forms of media including pictures, text, video, simulation and animation to convey information. For instance, PowerPoint could be combined with media resources like video, text and voice narration to produce an instructional medium called 'Multimedia Presentation'.

Britannica concise encyclopedia (2006) defined multimedia as computer-based electronic system that affords users the opportunity to control, manipulate and integrate media elements like text, voiceover, video, infographics and animation to ensure effective delivery of information. It helps the user in providing information from different media on one platform thus enhancing networking and resource sharing. Multimedia can also be seen as educational software involving animations, sounds and text in CDs and DVDs.

In the words of Marshall (2001), multimedia has to do with the integration of diverse media elements like text, graphics, charts, images, simulation, animation, voice narration and other media through capabilities of computer. In this format, every type of information can be processed, stored, and transmitted in digital form. According to Wikipedia (2019) it is possible to record, play, and utilise multimedia to display,

interact with or access information content through an information processing devices, such as a computer or any other electronic device(s).

The definition of multimedia contains four components as follows:

1) Computer: This coordinate what you see and hear

2) Links: This connects the information

3) Navigational tools: This enables you to traverse the web of connected information

4) Transmission tools: These are tools used in the gathering, processing and communication of information

Vocabulary.com dictionary defined multimedia as simply transmission that combines media of communication (text, graphics and sound etc.). Multimedia is used in multimedia conferencing, video, mail, office management, business applications, modelling, simulation, teaching and training, entertainment, publishing, high speed networking and health care etc.

Multimedia can be summarized as follows:

a) Multimedia has both input and output. It also deals with the interaction of both the input and output.

b) The output deals with multiple streams or channels running parallel e.g graphics, text, video, sound etc.

c) For the input, with the aid of keyboard, spoken commands, mouse or touch screen multimedia generates blended events.

History of Multimedia

Multimedia can be traced as far back as 1455 when Gutenberg invented the printing press. In 1839 Morse produced photographs using a paper negative. Edison in 1888

produced gramophone which was manually rotated. He also produced a film from sequential photographs with wheels that will enable the film move forward. The film at that time was manually operated through a projector. In 1927 there was a first public demonstration of television. In 1928 the first cartoon with fully synchronised soundtrack was recorded. Ten years after, "snow white and the seven dwarfs" an animation was released. IBM 701 computer which makes use of vacuum tubes, RAM and punched cards was invented in 1955. A network broadcast that made use of video tape was released in 1956. The first home video was released in 1963. Another major breakthrough was the production of "PONG" video game in 1972 by Nolan Bushnnel. In 1977, two friends, Steve Jobs and Steve Wozniak while working with Apple Computer Company launched Apple II computer with colour graphics. IBM released PC in 1981 while Apple released Macintosh in 1984. Macintosh was the first computer system to use a graphical user interface (GUI) and to produce a mouse which enhanced interaction between people and computers.

Windows operating system was released by Microsoft in 1985 while Commodore company released the Amiga same year. These operating systems were seen to be the first multimedia computer due to its advanced graphics processing power and innovative user interface. Over the years, while Amiga faded out, Windows became the standard for desktop computing. Windows and Mac Os handled directly, graphics and sound formally handled by individual software applications. In 1988, a company called Macromedia formally called Macro mind, released its landmark Director programme. This programme allowed their users to produce multimedia presentation that are highly interactive and impacting. Macromedia flash contributed a greater number of the animation and other multimedia on the internet today. At present, multimedia experience is improving on a daily basis.

3.2   The Main Elements of Multimedia

There are basically five elements of multimedia are as follows:

i) **Text**: Text is commonly used by all. It consists of letters, words, sentences and paragraphs. You can send a text to your friend to convey a message. Most multimedia includes text, at least you may need to label your pictures, diagrams or even give your work a title and text will be employed. Apart from letters, text also includes numbers, punctuation, symbols, and special characters. For most applications text is needed for giving instruction on how to use them e.g manuals. For instance in designing graphical user interface (GUI) applications, including menus that include short meaningful words, symbols, help menu, thesauruses, hyperlinks in Web pages and error reporting text is needed.

Just as words are powerful, texts are equally powerful and must be carefully chosen so that they can convey the intended message. This is the reason why experts in multimedia are expected to appropriately select the words that convey the real idea of the content. According to Vaughan, (2004) and Li & Drew (2004) this is done in addition to other properties of text such as size, color and effects to grab the reader's attention. This brings us to what is known as "Text Technology" which has to do with designing of text for multimedia and computer use. For instance, the typeface includes fonts of different sizes and styles such as Bold, Italic and Underline. The size of a font is usually measured in points and each point is 0.0138 inch. The font also has other attributes such as vertical space between lines of text known as leading and the space between characters pairs known as kerning. These attributes help to make viewing easy and for printing to be more precise. Two basic categories of font have been identified, which include: serif and sans serif. The most commonly used is Serif and it includes Times New Roman, Calibri, Arial among other fonts. Sans serif, has no strokes and widely is used in computer monitors, since it has contrast that works well with the screens.

ii) **Graphics and Still Images**: As I mentioned earlier, the multimedia combines different elements of media to engage learners in instructional process. Apart from the text, multimedia requires the capabilities of images to provide visual representation of the message. These images include graphics and still images.

Basically, an image is a critical component of multimedia that represents a replica a physical or imaginary object. It is quite useful when the physical object is not available or inaccessible. Thus, a still image usually represents, protects, stores and displays a visual representation of a particular phenomenon or object that can be displayed on a computer screen, and this combines pixels with brightness and colour for effective representation. In essence, an image can be defined as a collection of dots and representations with colours. These representations and dots, which could be black and white or coloured, are usually combined with colours to produce an entire image that conveys information and message. Digital images can be represented on a sheet of paper and in other form, it can be stored on a computer after being captured using a digital camera. You also need to note that image editing software also has the capabilities that allow you to draw these images directly, which can be saved for use anytime, anywhere. It is also important to mention that images can be stored and distributed in various standard formats such as the 8-bit GIF format (Graphics Interchange Format) and JPEG format (Joint Photographic Experts Group), which is considered the most commonly used formats in Web browsers. These two standard formats (image compression formats) are platform-independent and popular due to the small file size that is mostly suitable for exchange over slow network channels. However, other less common formats are used in multimedia such as BMP, PICT, PNG, and TIFF. Digital images are divided into two types: Bitmap images and Vector images. In the next sections, we discuss these two types and emphasize their differences (Gonzales & Woods, 2002; Li & Drew, 2004).

Bitmap Images

Now, let us move a bit further, by briefly examining the concept of bitmap images which are also called raster images. These images are usually representations of a two-dimensional matrix of pixels. In each of these pixels is a different representation (pixel depth), which basically depends on the type of the image.

Binary Images

This is also called 1-bit monochrome images. In these kinds of images, a single bit and a value (either 0 or 1) represented with white and black or coloured display is present in each pixel. Due to their small sizes and low display quality, these types of images are largely used for illustrations and simple representations. An example of binary image is in figure 2(a). The image with 600 x 800 dimension has a file size of 60KB. What can be visibly observed is the poor quality and contrast of the image as it is represented in only black and white colours.

Fig.2(a)

Gray-Level Images

Another type of image that you need to know is gray-level, or what is usually called 8-bit image. In this type of image, each pixel has a value range between 0-255 basically made of gray colours or shades. The combination is such that 0-value pixel is generally black while the other part consisting of 200-valued pixel is a bright colour or sometimes close to white. This is represented in figure 2(b). you will observe that there is now a significant improvement in the visual quality of the image. In other words, the image now has improved viewing quality and better contrast display.

Fig.2(b)

8-Bit Colour Images

 You need to note that the two image types that we have discussed are characterised with limited colours. This implies that they are either black and white or grey mixed with black colour. However, the 8-Bit colour image has a combination of colours. In this case, each pixel is usually represented by 8-bit value with colours ranging from 0 to 255. There are three basic colours combined to form this type of image. These colours include red, green, and blue mostly referred to as RGB colour space. However, what can be seen as the main difference between this image and the gray-level image is that the pixel value is not a colour. It is rather an address to an index of colours, which is usually stored in the machine that displays the image. This index of colours is referred to as a look-up table (LUT), which basically comprises all the colours that in an image.

Fig.2(c)

24-Bit Colour Images

This is another type of images that can easily be used for representation and instruction. It is a rich colour image that can convey meaning with clarity and precision. In this type of image, each pixel is stored as three bytes of colour and resulting to combinations of colours (16,777,216). The image is usually represented as three-dimensional arrays combining the three main colours. These colours are red, green and blue. With this arrangement, one array represents each colour and this combination is mostly referred to as RGB images. This is represented in figure 3 below:

Fig. 3

Vector Images

This type of image is usually made up of one or more objects that are defined and stored as mathematical equations and not by pixels as we have in other images. The mathematical equations that are used to represent vector image indicate a reference point of a line, including direction and endpoint. It is similar to drawing a rectangle on a page (Figure 4 shows a rectangle and a colour-filled circle). These shapes have main characteristics like colour, fill and outline and all these attributes can easily be edited without affecting the nature of the object itself. Apparently, these objects can be manipulated and easily resized, or moved and they are basically animated images. What can be considered as the main advantage of these images is mainly the small file

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size. The small size of the vector images makes them easy to store on computer's memory, and display quickly on computer monitors anytime, anywhere.

Fig.4

iii) **Animation:** Animations are moving graphic images used to illustrate concepts that involve movement. They could be computer generated. Some concepts cannot be easily explained using a photograph or series of photographs. Animation makes teaching of such concepts easier.

iv) **Audio:** It has been established that the audio is a powerful media component that touches the emotions and senses of humans and even animals. In all human activities, the use of sound has been considered as critical component of multimedia used for information and instructional purposes. Multimedia resources can hardly communicate effectively without sound or voiceover. Imagine a computer game, videoconferencing or an instructional video without sound or voiceover? These media cannot be used effectively by the users without the audio component. Generally, sound is generated as a result of differences in pressure that produce waves which can be move in different directions. In most cases, the interest usually lies in the use of sound in multimedia, where is it used, how to generate it and how users or developers can integrate sound in a multimedia project (Pohlmann, 2000). With the advancement in computers and internet technologies, many computer

applications and Web pages can now be integrated with digital sound to function as alerts in case of errors or warnings as the case may be. In this case, the audio component is stored on the computer in form of digital data which can be a digital musical instrument (MIDI) and it can also be digitized from an existing recording. In simplest terms, the process of digitizing an existing medium involves the conversion of a sound from the continuous form (analog) into digital format (discrete form). By this process, a sample of the audio will be taken at a given time interval and stored as an 8-bit or 16-bit sample of data. The sampling of digital multimedia is usually done at three common frequencies i.e. 11.025kHz, 22.05kHz and 44.1kHz. This will then be stored in form of mono or stereo sound either on a computer memory or CD. The audio files can exist in different formats including MIDI, MP3 Audio, WAV audio, Windows Media, and MPEG audio stream. These formats can easily be played on different platforms, they only require the installation of a media player that is capable of recognizing such formats work effectively. One of the main strengths of a digitized sound is that it allows editing with the use of digital audio editors. Tools like Audacity, Adobe Audition and Apple Quick Time Player are some of the editors that can be used to edit the audio content.

v)   Video: You need to understand that audio has basic limitation of not having the ability to display the visual content. Learners are left to imagine what the visual display looks like. Therefore, there is need to explore the capability of video to effectively convey the required information. Video can be defined as a series of images or slides that are displayed on a television or computer screen one after the other. This creates the illusion of motion and interactivity that could engage the audience with the content. This combination is usually created by a display of a number of different frames per second where each frame contains a slight difference from the previous one. One of the main characteristics of a video is that it occupies large space. However, video can easily be transmitted live through a television broadcast, a videoconference or even on a mobile device (Bovik, 2000; Sayood, 2000).

There are different types of videos based on their purpose (Boyle, 1997).

- **Video as a text replacement**

   A video can serve as a text replacement if an instructor records a video in addition to the   explanations that follows a paragraph of text or lecture presentations. This kind of video makes learning more interactive and allows users to process the content at their pace.

- **Narration**

   This is when the entire content of learning material is produced as a video. This may be tedious and seemingly uninteresting since interactivity is not emphasized.

- **Scenario**

   Here, actors are used to demonstrate certain situations and recorded as a video. This is mainly   used to represent certain activities in various courses.

- **Simulation**

   This kind of video involves users which makes it more suitable for an interactive online learning. Here, learners learn in a practical way. The process involved in creating a simulation is quite challenging, however, the output has many advantages over other multimedia resources. One of the main attributes of the simulation is the interactive interface or environment in which users can learn about an event in a more realistic way (Boyle, 1997). Simulation can be useful when a particular event might be too risky to be brought into classroom environment, for instance, territorialism in lion kingdom.

- **Demonstration**

   This is another type of video that can be used to explain procedures involved in an event. This video can be used to demonstrate step by step guidelines to follow in executing a particular task. In teaching-learning process, demonstration video can be quite useful to explain different concepts that involve specific guidelines and procedure. For instance, a teacher can demonstrate in a video, how to install a particular software on a computer. Teaching this kind of concept requires more than listing the steps in text format. The teacher or an online tutor should be able to

demonstrate the steps involved through visual demonstration. This can be done through screen casting.

- **Hypertext**

  Hypertext consists of nodes or chunks of information that are basically text with existing links between the different nodes. A good example of hypertext is when a text references other using footnotes with the footnote marker providing the link from the text to the footnotes. There are no rules regarding how big a node should be or what it should contain. There are no rules governing what gets linked to what. In hypertext, the links are active, such that once touched something happens. In a hypertext link, movement between two nodes takes place automatically.

- **Hypermedia**

  The term hypermedia suggest that links exist to information held on different media, e.g., video, CD, etc. It refers to information containing high proportion of graphics and images and it's especially used where the information also includes video sequence or any form of animated information. In other words, hypermedia computer files are hypertext documents which include not only text but pictorial and aural information. Apple's HyperCard was the first major tool to establish hypermedia, as a practical environment for multimedia application. Using this kind of tool, the user can be able to combine multimedia elements like video, graphics, image, animation and audio content. This provides users with a form of flexibility to select the content to be viewed at a particular time.

- **Hypermedia Formats**

  Encyclopaedia reference: This includes encyclopaedias, dictionaries, thesauruses, etc. This type of reference contains large amounts of text, pictures, audio, and movies with links between interrelated information. It also made provision for several methods of searching and retrieving of information. E.g., World Book Multimedia Encyclopaedia. Specific subject matter reference: This type of reference catalogue specific reference works of particular subject areas e.g., Art and life in Africa.

- **Analysis of a domain:** Analysis of a domain which is similar to specific subject matter emphasizes on the analysis rather than on presenting information. It usually

includes different viewpoints and arguments in discussing the complexities of the subject and in analyzing issues e.g., Set on Freedom, (analyzes the U.S. civil rights movement)

- **Case study:** It is similar to the analysis for a domain but analyzes a more defined topic, such as a person, a historical event, or a work of art or literature e.g., Macbeth, (Shakespeare play)

- **Construction set:** Construction set are hypermedia programs which in addition to the material (references), provide learners with tools to construct their own hypermedia compositions e.g., Visual Almanac

- **Edutainment:** Edutainment refers to hypermedia programmes that are both educational and entertaining. They are generally specific matter references or case studies embedded in a scenario that is engaging for young children e.g., Kids culture: The Great Explorers (learn about explorers in 3D environment and with a movie like presentation)

- **Museum:** These are virtual museums representing real ones and their exhibits. They typically include virtual reality capabilities to represent reality as better as possible e.g., Art Institute of Chicago

- **Archive:** These are collections of movies, news, photographs, newspaper articles, journal articles etc. which either exist in digital form or they have been digitized e.g., National Geographic Archive.

3.4 Types of Multimedia

Multimedia can be classified into two broad categories namely interactive and non-interactive multimedia.

1. Interactive Multimedia

Multimedia resources are strategic components of presentation or classroom instructions. The media resources should contain different elements like videos, image, infographics among others. Investopedia (2019) defined interactive media as a communication mode which allows interaction between inputs and outputs. In this kind of presentation resource, the outputs are usually dependent on the user's inputs and at the end, the user's inputs will influence the programme's outputs at a particular time.

The interactive media will get you engaged and interact with you in such a way that the non-interactive media can never do. As you know, the traditional forms of media such as television and radio, originally does not require you to participate actively. You are passive and not given the free hand to navigate through your experience. However, with the advent of internet and as technology developed, different tools were made available to consumers for navigation thus making the media interactive. The internet, computers, laptops and mobile devices such as the mobile phones made interaction in media easy. Examples of interactive media include social networking websites such as Facebook, Twitter and Instagram. These sites enable you to share photos and information through the use of graphics and text. Video game which is another type of interactive media, allows you to respond to visual and sound cues on the screen, generated by a computer programme using controllers. Another example of multimedia is Smartphone. With the use of a Smartphone, you can use apps or applications. These forms of interactive media can direct you to your desired location choose and respond to news stories in which you are interested, and allow you to shop. Finally, virtual reality or VR which is another form of interactive media, gives you a completely immersive experience, allowing you to delve into a world that is an almost carbon copy of reality. The only difference is that this world is digital.

In fact, interactive media enhance users experience through the combination of one or more of the following elements:

- Moving images and graphics
- Animation
- Digital Text
- Video
- Audio

You can manipulate one or more of these elements in learning which traditional media cannot offer. Interactive media has made people more active and also gives them the power to communicate with people, companies or organizations. It permits a free flow of ideas and exchange of information.

2. Non-interactive Multimedia

Non-interactive media is a method of communication in which the information consumers are passive. Information is received by consumers in form of video, sound, images, text, animation, etc. without a corresponding action from them. In other words, users' input is not acceptable. For example, the traditional televisions programmes are watched passively unlike a game programme that individual actively participate. Information dissemination is linear (Non-Interactive) such that users have no navigational control.

4.0   CONCLUSION

In conclusion, it is impossible to define multimedia without reference to the five basic elements of multimedia. Multimedia experience is advancing on daily basis.

5.0   **SUMMARY**

In this unit, you learnt the different definitions of multimedia. These various definitions saw multimedia as an integration of two or more of the elements (text, graphics, video, animation and audio) of multimedia in a single platform. Also, a brief history of multimedia was given. Finally, the two basic types of multimedia (Non-interactive and interactive) were discussed.

6.0   TUTOR MARKED ASSIGNMENT

1.   Define multimedia and identify the five basic elements of multimedia.
2.   Identify and briefly discuss the two basic types of multimedia.

7.0   REFERENCES/FURTHER READINGS

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UNIT 2: THE RATIONALE FOR USING MULTIMEDIA

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1.0 INTRODUCTION

In this unit you shall be made to understand the reasons why multimedia is needed in teaching, learning and research. We shall bring to highlight the underlying principles behind the use of multimedia in libraries and information centres.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- Identify reasons why multimedia is needed in any learning environment especially the libraries and information centres.
- Discuss the disadvantages of multimedia.

3.0 MAIN CONTENT

3.1 Reasons for Multimedia in Teaching, Learning and Research

There are underlying factors why multimedia is important in any educational environment such as the library and information centres. Below are some of the reasons for multimedia:

1. Deeper understanding

According to research, multimedia usually takes advantage of the capacity of the brain to establish connections between verbal and visual representations of the content. The implication is that this seamless connection engenders a deeper level of understanding that supports the transfer of learning to other situations and circumstances. All of this is important in today's 21st century classrooms, as we are preparing students for a future where higher-level thinking; problem solving and collaborative skills will be required. The ability to process information using dual mode, verbal and pictorial representation improves learning. Relevant and supportive illustrations have been found to enhance learning of textual stories. Background knowledge is fundamental to learning. Multimedia helps to supply the missing link i.e prior or background knowledge needed by learners to enhance comprehension. For instance, the incorporation of pictures, sound, and animation, significantly enhances students' ability to recall basic facts, as well as improve their understanding of complex systems. Furthermore, it is important in learning to put into consideration individual learning styles in order to empower all students to achieve their potentials and digital media tools help to address this. In general, Multimedia enhances students' understanding, improves retention and helps to better problem-solving transfer (Mayer, 1997). Some researchers argued that learning with multimedia decreases learner's study time spent on learning materials up to 60% over traditional classroom method (Najjar, 1996). According to Reinhardt (1995) 80% of understanding comes from visualization (from the use of animation, video, laserdiscs, CD-ROM books, and hypermedia) and much less from hearing. There are five sense organs (sight, smell, taste, sound, and touch) and multimedia presentations can stimulate more than one sense organ at a time, which makes it more attention getting and attention holding (Jonasson, 1996).

2. Improved problem solving

There are increasing evidences that a significant portion of the human brain is used practically for visual processing of information or data. The combination of visual

elements like images, video and animations with text usually stimulates the brain to interpret information more effectively and thus increases the rate of students' engagement and retention. Using these kinds of learning resources, students will have the opportunity to identify and solve problems more effectively, when compared to a teaching-learning process that is anchored on text-based materials. Apart from improvement in learning, multimedia has also enhanced communication and collaboration. Through making presentations in power points and hyper studio, for example, learners get engaged in critical thinking which is one of the skills needed by 21st century learners. Generally, multimedia has been considered as a strategic tool to that could be used to promote cooperative learning and enhance collaboration among the students (Johnson & Johnson, 1986). The learning environment created by multimedia allows effective collaboration and engagement with the instructional content.

3. **Increased positive emotions**

Multimedia has also been touted as an important tool that promotes positive emotions of different categories of individuals in the society. In the words of Barbara Fredrickson, experiencing positive emotions affords people the opportunity to identify more possibilities in their lives and take appropriate decisions at a particular time. In teaching-learning environment, improved positive emotions will motivate students to learn better and take accurate decisions concerning their learning.

4. Access to a vast variety of information

Multimedia resources have been described as effective tools that could enhance teaching-learning process. These resources have the capabilities to disseminate information for diverse categories of audience, especially within the learning space. Another strategic importance of these resources in the presentation and instructional settings in the ability to unlock access to a myriad of information anytime, anywhere. Okpala, (2016) revealed that 74% of students, who can connect to the internet, use it to search for relevant information and learning materials to facilitate learning and

research. Multimedia resources allow adequate access to information and cross-fertilisation of ideas among the audience. The implication is that instructional videos, images, audio and infographics present audience with a large volume of information for learning and research. This makes the resources to be quite appropriate for presentation and instructional settings. For instance, an instructional video will present information and research data from different countries of the world to facilitate learning. This could not have been possible with only text-based materials. Thus, a presenter needs to ensure that multimedia resources are adequately used within the presentation or instruction to convey information that is relevant to the audience.

5. World exploration

It has been established that multimedia motivate students to explore and learn about geographical regions across the world. This allows them to learn the culture and geographical landforms in other places of the world, without leaving their countries. For instance, geography students can explore different countries of the world and various geographical landforms through atlas and maps. Also, science students can easily learn about space and planets exploration with multimedia resources like infographics, instructional videos, animation and simulation. All these class activities bring learning to the classroom from different places in the world.

6. Individualized learning

Multimedia resources allow audience to learn at their own pace. This implies that elements in multimedia promote learners' interest and motivate them to engage in deep learning (Mulwa et al., 2012). It should be noted that people learn in different ways and the audience consists of individuals from backgrounds. These people have diverse learning styles and expectations that should be considered by the presenter. The critical elements in multimedia cater for the learning needs and aspirations of different categories of individuals. You need to take note that some individuals might prefer to learn with audio content while others will prefer visuals. As an efficient presenter/teacher, you are expected to take into consideration, the peculiar characteristics of your audience. This allows you to prepare content that suits their

learning styles and expectations. Multimedia resources will allow you to cater for the diverse learning needs of the audience, anytime, anywhere.

7. Enhanced Feedback System

Distant education is a common practice these days and even learners in conventional settings have high expectations on how information is disseminated to them. Multimedia makes learning, teaching and research easy by transmitting information remotely via multiple media, such as text, video, animation, graphics and audios through the computer and internet. Multimedia helps to put learners' attention into focus and because it gives room for interaction, feedback is enhanced.

3.2   Disadvantages of Multimedia Applications.

- **Information Overload**: The advent of multimedia has lead to much generation of information. Users therefore have so much information to contend with. This can lead to confusion. For library professionals, there is a problem of how to organize such amount of information.

- **Production Cost and Time**: Creating of information in multimedia format can be time consuming and expensive considering the initial cost of equipment and setting up. For instance, you spend time trying to figure out suitable software, collect images and sound bites and putting them together in a professional looking presentation. Cost of internet should be considered alongside delays in presentation when waiting to upload multimedia. Furthermore, multimedia devices are built using expensive technology, which makes them generally expensive. Also, these devices which are usually highly sensitive can easily break or have a software crash, thus, requiring you to spend more money to have them repaired or replaced.

- **Compatibility**: There is the problem of incompatibility of systems being used. Technology is ever changing so also is multimedia devices. They can be rendered obsolete in a matter of few years. This means that you may need to buy yet another new device and the data on your old device may be difficult to transfer to the new one.

- **Distraction:** If one is not careful, multimedia can serve as a distraction from the message being conveyed. For example, the quality of the multimedia you use in your professional communication, can say something about your company which might be a distraction to the message you're trying to convey.
- **Accessibility:** Multimedia requires electricity for accessibility which may not be available in rural areas.

4.0 CONCLUSION

The use of multimedia is highly recommended in education, having seen the underlying principles behind its use. It has helped to solve the problem of comprehension and critical thinking which the traditional mode of education could not handle. In the next module, we shall be discussing multimedia technologies application in libraries and information centres.

5.0 SUMMARY

In this unit, you have seen the reasons for multimedia application in libraries and information centres. Some of the reasons are to: (1) gain deeper understanding (2) improve problem solving, increase positive emotion (3) gain access to vast variety of information (4) Explore the world around you (5) individualize learning and (6) enhance feedback system. Also, you have seen the disadvantages/ challenges in the use of multimedia.

6.0 TUTOR MARKED ASSIGNMENT

1. Discuss the underlying principles in multimedia application in libraries and information centres.
2. List the challenges in the use of multimedia.

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MODULE 2: MULTIMEDIA TECHNOLOGIES APPLICATION IN LIBRARIES AND INFORMATION CENTRES

Unit 1:   Use of Multimedia Technology in Libraries

Unit 2:   Multimedia Use and Digital Libraries

UNIT 1: USE OF MULTIMEDIA TECHNOLOGY IN LIBRARIES

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2.0 Introduction

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      3.1 Multimedia in Libraries

      3.2 Library Applications

      3.3 General Hardware and Software Requirement for Multimedia

4.0 Conclusion

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6.0 Tutor Marked Assignment

7.0 References/Further Reading

1.0 INTRODUCTION

As a student in the field of Library, Archival and Information Science, you must be prepared to handle digital libraries. Libraries today are moving towards being digital where large number of resources are in multimedia formats. You need to know available resources in multimedia formats, how to design multimedia products, the basic skills you need to function in multimedia library and the basic skills required for your users to maximise the use of multimedia resources in your library. This module will be discussing all of these issues. Haven seen the various advantages of multimedia application in various spheres of life, you should, in this unit be introduced to its application specifically in libraries and information centres.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- Identify the various ways multimedia can be applied in libraries.
- Discuss other fields where multimedia has been applied.

3.0 MAIN CONTENT

3.1 Multimedia in Libraries

Multimedia enhances networking and resource sharing in libraries. Multimedia Library provides high quality services. It allows for better access and presentation of information. Library users can have access to variety of quality information, particularly in this information explosion era where users find it difficult to select quality information from the lot. Multimedia also saves users time apart from giving them the exact information needed.

Most big libraries these days such as the Library of Congress (LC), British Library, OCLC, etc., build their collections in multimedia format. Basically, most of these libraries use the reference and educational products. They also use databases (both bibliographic and full text), electronic books, etc. Some libraries such as American Centre Library, British Council Libraries in Delhi provide multimedia PCs for internet and multimedia resources for their users. According to Ramaiah (1998) some of the general applications of multimedia are given as follows:

i)   Instruction/Training and technical presentations

ii)   Multimedia communications such as e-mail.

iii)   Public information points/kiosks for libraries, museums, hospitals, tourist sites, monuments etc.

iv)   Reference tools, e.g. encyclopaedias, directories etc.

v)   Archival systems

vi)   Geographical information systems

vii)   Electronic publishing and book selling

 viii)   Entertainment, leisure, home

ix)   Exhibitions such as conferences, trade shows, new product, facilities, museums, libraries, etc

x)   Interactive display in museums, hospitals, libraries, etc.

Storage Media

Library and information centres handle great amount of information in different formats. It is even worse in this 21st century with information explosion. With ever growing resources of the library, there is always a problem of storage space. Also there is a problem of how to retrieve relevant resources amongst overwhelming lot for library and information users. Optical media has proven to be reliable in the mass storage of information. This disc can be categorised into three: read only memory, re-writable and Erasable.

The CD-ROM is a common optical storage media. It is a high-capacity optical storage device of 12cms diameter, that stores up to 650 MB of information, 2,40,000 pages of text or 70 minutes of music or video; on a single 16gm platter on polycarbonate. CD-ROM's are used to store encyclopaedias, dictionaries, studio quality audio/video etc. and are largely used as a distribution mechanism for large packages. It has great potentials as an informative storage media and has revolutionized the concept of information retrieval also. The advantages of CD Technology are: accuracy, high storage capacity, rapid data access, low cost, simplicity, standardization and robustness.

Storage and retrieval in CD-ROMs are made possible by converting the Information into series of 0's and 1' s. These digits which are stored on an aluminium surface as pits and lands respectively are arranged on the disc. To read a CD-ROM, a laser light is thrown on the disc surface and the light reflection gives the data. In case of PC's, as the CDROM drive is passed on the PC, it takes over the task of conversion.

Multimedia Personal Computer (MPC)

Some big libraries make multimedia personal computers available for any interested library user. These PCs look exactly like the regular ones and of course does all the functions of the regular ones too. However, it has additional hardware, which allows it to run the vast array of multimedia software that is available. In order to provide some sort of reference for buyers of multimedia hardware and software, an organization called the MPC marketing council has established a standard for multimedia machines known as MPC specification.

3.2 Library Applications of Multimedia

Libraries and information centres maintain a collection of resources in diverse media formats such as books, video, film, audio, tapes, gramophone records, microfilms and microfiche. It was impossible to view more than one media at a time until much recently with the advent of multimedia technology. The use of multimedia in the library has made the following possible:

- **Acquisition, organization and dissemination of the information:** Multimedia has made the acquisition, organization and dissemination easy. Information can easily be generated because of easy access to diverse form of information in large amount. Multimedia has therefore helped to widen information horizon.

- **Information storage:** A key problem in management of library resources is the problem of storage. There's always the issue of lack of storage space appearing at some point in all libraries. Multimedia products such as the CD-ROM have helped to solve such problem as these products can contain large amount of information in video, text, audio, graphics and animation all in one platform. Multimedia can be used in various library operations and services.

- **Information Dissemination:** One major function of a library and information centre is the dissemination of information. The internet and the web multimedia have helped the library to perform this function with ease, efficiently and effectively. On request within a short time, information is disseminated to

library users no matter their geographic location. A good example is online electronic newspapers read daily, promptly and available at all locations and at all times.

- **Publishing:** Many books, articles, Magazines and newspapers have both printed and electronic version. In electronic versions offer many features that can only be possible through multimedia. For instance, the electronic newspaper enables readers to sear through archives; listen to actual interviews, viewing descriptive animation and interacting with the publication is among the many capabilities of an electronic format. These additional features make these electronic publications appealing to readers thus helping to expand the readership of these publications.

- **Library Networking:** Multimedia has enhanced networking of libraries in different geographical locations. Libraries round the globe can share resources easily with the internet/www.This is particularly useful in libraries in the face of decreasing budgets. These networks provide navigational tools and associated services which can be used by libraries to access remote resources for browsing, searching and even down loading. Networking has helped the library to maximize the utilization of existing information resources by sharing and providing speedy access to information resources located at different places through communication channels.

- **User Education and Staff Training:** Multimedia has enhanced user education such as orientation programmes etc., User education and training are better organized using multimedia products such as PowerPoint, CDs and Videos. Trainings become more effective, more impacting with inbuilt feedback systems in multimedia. Library users can understand the services and facilities of the library which will maximize the utility of library resources and improve research. Hypermedia-based (computer based) training for staff and users can cover library services, online catalogues, orientation to libraries, circulation policy, access to journal literature, preservation of library materials, introduction to reference works, using e-mail, technical services, integrated online systems for libraries and acquisition and processing of library materials

(Ramaih, 1998). The following are examples of multimedia-based packages designed with Hypercard for library users and staff training:

- illuminate-a Multimedia-based CAI project about the University of Minnesota Library's
  OPACs

- Tour of the Internet-a quick tour about the Internet

- Information Access-a library research skills tutorial for the university students.

- Hypercard-basedAACR2-a self teaching CAI package for preparing catalogue cards

- HyperCard-based University of Hawaii OPAC tutorial

- CatSkills-an interactive Multimedia package to teach AACR2. It is a good professional training tool for students, beginners in cataloguing and working librarians. This multimedia CD is available in both Mac and Windows platforms. The Library Association, London is marketing this tool for $495

- UGE 100 Library Skills-designed by the Wayne State University Library

- Teaching Mini Medline-a training tool for library users

- STAR (Student Tutorial Access & Resources)- CAI package designed for OSU Libraries

- Hypermedia-based CBT package for training the new staff of University of Tennessee, Knoxville libraries

- **Reference Sources and Services**: Several reference sources such as dictionaries, encyclopedias, directories, yearbooks, magazines and journals are now available in multimedia format. Users find these reference materials in multimedia formats interesting and engaging. Reference services to users are also made easy through multimedia products. A good example is the multimedia library information kiosks/walk-through programmes. A walk-through programme is an interactive multimedia database on specific topics/subjects. The programme takes the viewer around either through interaction or automatically to provide quick reference for library users. According to Ottaviani (1993) 66% of reference questions are directional, so

librarians can design Hypermedia library information kiosks to provide quick reference services for their users. Some Hypermedia walk-through programme can provide information about the collection, catalogue, archives, services and location of various collections. Examples of multimedia/web library guides are: Electronic library guide in the

University of Birmingham's main library and guide to south Bank University's Centenary Library.

- **Durable storage media**: Information in multimedia format is more durable as its not subject to theft, mutilation, dust and other environmental hazards.

- **Maintenance and Management**: A large amount of information can be stored in a single digital disc unlike the traditional library where such amount of information would occupy so much space on the shelves. It becomes easier to manage and maintain information in multimedia format like the disc.

- **Self-learning Tools**: There are several commercial self-learning tools e.g. National Geographic's Animal Samplings, ABC Golf, Music Data City, Cartoon Jukebox (an interactive colouring book for children) and Magic Flute, etc. Libraries can purchase and provide these tools for free to their users.

3.3 Hardware and Software Requirements for Multimedia

The following hardware is required for a standalone multimedia:

- Computer

- Monitor

- Input Devices

- CD Device and CD ROM

- Sound Synthesizer

- Scanner

- Printer

- Video Camera

- Means of user

A standalone multimedia also requires software classified as system software as follows:

- Video for Window

- Quick time

- Digital Video Interface

- Multimedia Technology

Other software that are equally necessary for multimedia environments are: Photoshop, Adobe Dreamweaver, Adobe Fireworks, Gimp, Google, Sketch up, Adobe Flash Player, Adobe CS4 etc.

Multimedia Workstation requirements

Any multimedia system has a minimum configuration required as follows: 386 or 486 processor at least 4MB of RAM, VGA video Display 640x 480 resolution super VGA about 30MB or 100 MB hard disk, Microsoft compatible mouse, CD-Rom drive, video Cards,101 Keyboard be added to run simple multimedia application.

4.0 CONCLUSION

Multimedia enhances library operations and services. The 21st century librarian must therefore be knowledgeable in the available multimedia products/resources. Librarians must also acquire sufficient skills to operate and develop multimedia resources themselves.

5.0 SUMMARY

In this unit, you have learnt the areas where multimedia has been applied in the library. In particular, we discussed the use of CD-ROM as a storage media and how multimedia has made the following possible: (1) Acquisition, organization and dissemination of information (2) Information storage (3) Publishing (4)

Library networking (5) User education and staff training (6) Reference sources and services (7) Maintenance and Management of information.

6.0 TUTOR MARKED ASSIGNMENT

1. Explain how multimedia has helped to solve the problem of storage, space and durability of resources in the library.
2. Identify six areas that multimedia has imparted the library.

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UNIT 2:   MULTIMEDIA USE AND DIGITAL LIBRARIES

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1.0 Introduction

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        3.1 Multimedia in Digital Libraries

        3.2 Multimedia Catalogues

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7.0 References/Further Reading

1.0 INTRODUCTION

In this unit we shall be discussing multimedia use in digital libraries and the various multimedia catalogues. The focus will be on hypertext catalogue.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- Explain the various ways multimedia can be applied in digital libraries
- Identify the various components of a hypertext catalogue

3.0 MAIN CONTENT

3.1 Multimedia in Digital Libraries

Let us quickly look at the concept of digital library. This can be described as an electronic library, where users across different disciplines worldwide can have access to up-to-date information in the form of network electronic texts, images, government publications, maps, sounds, videos, catalogues, hypertext, hypermedia and other forms of information. The term "Electronic library" which was commonly used in the past, is gradually been replaced with "digital library". This may be due to the growing interest in digital networks, digital audio and digital video relative to electronic

publishing. Electronic library, digital library and virtual library are interchangeably used today. The fundamental attributes of a digital library are: Preservation, search and access, content creation, storage and retrieval.

The traditional library collections are usually in hard copies (printed form) and their operations and services are manual. On the other hand, virtual library is referred to as "library without wall" because there is no physical presence of books, periodicals, reading space or support staff, but one that disseminates information directly to the distributed users, usually electronically.

A hybrid Library *is* as a continuum from traditional library to the digital library, with electronic and paper-based sources used alongside one another. Digital library technology is needed to manage large amounts of digital content such as thousands of images or hundreds of audio clips, and also to perform searches that are impractical manually. There are electronic tools that allow easy management and searches of large amount of information containing multimedia elements. If in any way, digital libraries and archives have collections in print format, they are immediately digitized for easy preservation and provision of extensive access of content to users from multiple locations, thus enriching teaching and learning environment which is not possible with traditional printed materials. It is easy for libraries to develop their own digital libraries/multimedia archival system using the hardware/software provided by IBM. This provision allows the library to capture, index, store and retrieve tabular, textual, audio, still images, and video data at compressed and full resolutions. It also provides a search engine that can combine parametric queries, free text searches and Query by Image Content (QBIC). Libraries and their patrons can store and retrieve multimedia information along with textual information with IBM digital library. It allows users to capture information and images quickly, find them when needed and build them into new products quickly. There are some important digital library initiative projects such as:

- The Networked Digital Library of Theses and Dissertations: This is a project that aims to increase the availability of theses and dissertations by placing

them online with the content in an accessible form. The works may be accessed through the Electronic Thesis and Dissertation Library. http://cosimo.ing.unifi.it/research/elitinfo.html.

- National Digital Library (Library of Congress): This is the American Memory Project consisting of American collections at the LC and Country Studies.

Multimedia is one of the important components for a digital library. Multimedia application in libraries is highly recommended because in the present day context, large amount of information in the form of photographs, artefacts, audio recording, textual material are also available in libraries. Multimedia technology can help librarians in integrating all information in such various formats. Several reference books and journals are available as multimedia products.

Librarians must be proactive and not just seat back as a passive consumer of multimedia products. They must be creative and acquire knowledge on how to design and create multimedia products. For instance, librarians should learn how to develop databases, incorporating multimedia components. Multimedia databases make more impact on users than ordinary ones. The importance of multimedia in repackaging, consolidation and presentation of information cannot be overemphasized. Multimedia based online catalogue, user guides in libraries and interactive products for reference services can be developed to provide effective user services.

Multimedia Databases

A multimedia database is a controlled collection of multimedia data items such as text, images, graphic objects, video and audio. Multimedia has helped librarians in integrating all the information from various forms/sources subject-wise and making meaningful multimedia databases both for day-to-day use and archiving. Some libraries like Mendocino County Library, Ukiah has developed a multimedia database of historical and cultural information that is relevant to the Californian Indians in that area. This database also contains oral history of the natives. Another example is the Ancient Biblical manuscript Centre in Claremont. This centre according to Zuckman (1993) is involved in digitising and reformatting of photographic negatives on Dead Sea Scrolls into a comprehensive digital library.

3.2 Multimedia Catalogues

The multimedia catalogue should consist of four parts:

- hypertext catalogue
- audio catalogue
- catalogue of fine and plastic art
- catalogue of video films

Hypertext Catalogue

This comprises bibliographical data of books, journals and other text-based materials. It also contains the written data of audio, video, fine and plastic arts and others scripts. The hypertext catalogue consists of a wide-channelled structure of bibliographic data with many crossovers (links). In order to this effectively, there is a need to convert the information into other formats in addition to text. The reason is quite obvious. It is practically impossible to combine or store a catalogue in different multimedia elements, if you have access to only the written data of a particular work. For instance, the music is expected to have the audio component and the art works and the videos should have visual capabilities to convey meaning to the audience. The implication is that multimedia catalogue should have a combination of these media elements and should be properly digitised to be easily used by the users at any particular time.

Some special options can be used to link the parts of these multimedia catalogues for easy usage by the users. In order to restructure these additional catalogues like music completely, the catalogue has to be worked out according to its attributes. For instance, stylistic attributes like classical music, popular music, light music, and pop can easily be structured in accordance with their attributes. In this kind of arrangement, the attributes can be highlighted even more accurately to make this classification more convenient for the user.

Metadata

This is quite different from the traditional cataloguing system because it has the capability to deliver document with the use of appropriate software. This usually indicates the document address on the internet. As many libraries across the world

begin to utilise these functionalities, librarians are now in the best positions to cater for the diverse needs and aspirations of the library users.

4.0   CONCLUSION

Digital libraries have come to stay. Librarians must learn how to manage the various resources/databases of a digital library, especially the multimedia resources and participate in creating some**.**

5.0   SUMMARY

In this unit you have learnt the various ways multimedia can be applied in digital libraries. You first learnt the concept of a digital library and then the need for a digital library. Finally, you learnt the concept of metadata and multimedia catalogues.

6.0   SELF-ASSESSMENT EXERCISE(S)
1. Explain the various ways multimedia can be applied in digital libraries.
2. Distinguish between a card catalogue and a hypertext catalogue.

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MODULE 3: MULTIMEDIA APPLICATION IN LIBRARIES AND INFORMATION SERVICE DELIVERY

Unit 1:   Internet, Multimedia and Information Service Delivery

Unit 2:   Competencies and Skills of Multimedia Librarians

Unit 3:   Maintenance and Safety Requirements for Multimedia

UNIT 1: INTERNET, MULTIMEDIA DIGITAL LIBRARIES SERVICE DELIVERY

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     3.1 Multimedia and Information Service Delivery

4.0 Conclusion

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6.0 Tutor Marked Assignment

7.0 References/Further Reading

1.0   INTRODUCTION

As a potential librarian of the 21st century, you should know the various services you can offer to library users through multimedia applications. You need to be competent in operating various multimedia; therefore, there is a need to acquire the necessary skills. If you are to work in a multimedia environment, you should also know how to maintain multimedia equipment and take necessary preventive measures for your safety and that of your library users. This module will address all of these issues.

In the previous unit, we discussed the application of multimedia in digital libraries. In particular, we discussed the various multimedia resources and databases. In this unit

you shall learn the various library services that can be offered in a multimedia library and how multimedia has helped to improve information service delivery.

2.0   OBJECTIVES

At the end of this unit, you should be able to:

- List the various library services that can be offered in a multimedia digital library.
- Identify ways that multimedia has improved information service delivery.

3.0 MAIN CONTENT

3.1 Multimedia and Information Service Delivery

Delivering of information to the audience has been recognised as the basic function of any library as librarians need to be equipped with knowledge and skills to guide audience on how to access information that could be used for different purposes. With the dynamic nature of the society and increasing needs for adequate information in different areas, the traditional library services have become grossly inadequate to meet the diverse needs of the users. This has necessitated the need to adopt the use of multimedia in delivery of library service. In different countries of the world, libraries have embraced the use of multimedia resources to disseminate adequate and up-to-date information to various categories of users, especially in instructional setting where students and staff require relevant information for teaching and research. However, the pace at which these resources are being integrated by librarians in conventional universities in Nigeria is slow. Distance learning institutions and their libraries frequently use multimedia in their service delivery.

Multimedia resources have revolutionised the world of information delivery within the library setting to provide relevant resources that could be used to confront the emerging challenges of the digital age. Application of Internet and multimedia is changing the traditional library functions. The application of internet and multimedia in libraries has made the provision of easy access to current information possible. Internet which is an abbreviation for International Network serves billions of users worldwide.

Internet and multimedia services have been considered as major sources through which libraries can provide relevant and effective information services to the audience, who live in media-saturated environments. The introduction of Internet in library services has positively influenced the management of resources as well as service delivery to the various categories of users in the society (Ikegwuiro, 2017). This implies that libraries require the services of internet and multimedia to engage the 21st Century users, who prefer to relate with technology-based platforms rather than the traditional library setting. These resources make libraries and librarians become more relevant to the information system to provide relevant information that will assist learners to solve personal and societal problems.

The combination of Internet and multimedia has been integrated to all aspects of the library activities across different levels of education. These modern resources are increasingly changing the ways libraries organize, store, manage, and disseminate information to the audience. This has positively affected library services like acquisition, cataloguing, resource sharing, circulation, Inter- library loan, reference services, and document delivery which are strategic to the system of information flow and delivery. Their use has enabled libraries to reach both local and distance users much more easily and effectively.

Large amount of information in various multimedia formats can be delivered through e-mail to library users. Activities that were carried out manually in libraries with so much stress and strains are now being carried out smoothly with the help of internet and multimedia with greater effectiveness (Vijayakumar & Vijayan, 2011).

Multimedia digital libraries offer users the opportunity of using other libraries' catalogues through the use of Online-Public Access Catalogue (OPAC). Users can browse and select library materials of famous libraries such as Library of Congress, U.S.A, Alexandra library, National Open University of Nigeria (NOUN) Library etc. Some of these multimedia digital catalogues display the picture of their resources.

Inter-library loan service is another area that internet and multimedia have had great impact. A network of collaborating libraries can borrow resources remotely from one another. Library users can have access to the electronic copies of any document of their choice through document delivery services made possible through the internet

and multimedia. Most electronic copies are richer than their print versions because some have integrated video, audio etc. On request documents that are originally in print form can be digitized or scanned and delivered through internet to users at any location for a fee. With enhanced document delivery system, Selective Dissemination of Information (SDI) is more effective. The librarian, using library users' profile can select relevant materials on specified topics, scanned or digitized and send to individual users on request. Multimedia has made this process more interesting and interactive. Pictures of library users can be displayed with their profile. Current Awareness Services (CAS) is made easy with internet and multimedia. The librarian can easily send to all library users a list (update) of new arrivals with their cover pages.

Library education and orientation can be made possible through the multimedia library information kiosks/walk –through programmes for their users (Singh, 2016). Since this programme can be made available to users on the web, users can access them and learn at their own pace, anytime and from anywhere. Also, with online group chats and videoconferencing library education has become more effective.

Some libraries from their library website allow their library users to have access to circulation service such as charging and discharging of books from the comfort of their homes. On this website the library's OPAC will be on display. Renewal and extension request can be made without visiting the library.

With the application of Internet and multimedia in libraries, librarians can perform their functions more effectively and efficiently especially in the area of reference services. Patrons get satisfactory answer to their query/queries within the shortest time using multimedia library information kiosks/walk –through programmes (see explanation under multimedia systems). Also, there are various reference sources in multimedia formats such as: Digital Reference Sources, World Book Multimedia Encyclopaedia, Oxford English Dictionary, The manual of Medical Therapeutics, The Guinness Book of Records etc.

Also, internet and multimedia application in libraries has made it possible for users to have 24 hours access to library resources and services daily. In other words

information can be provided to the 'right users' 'any time', from 'anywhere' in the 'right way' (Fischer, 2012).

4.0 CONCLUSION

Multimedia use in libraries has tremendously improved library service delivery. In fact, multimedia has helped librarians to be more efficient and effective in delivering information to their users. Libraries in this 21st century that are resistant to the use of multimedia will gradually fade out.

5.0 SUMMARY

We have discussed the use of multimedia in delivering general library services such as lending services, Inter-library loan service and document delivery, reservation service, reference service, current awareness service and user education. Also, we have seen how multimedia has improved the delivery of the specialized library services such as literature search, selective dissemination of information, referral service and translation service.

6.0 TUTOR MARKED ASSIGNMENT

1. Explain the various library services that can be offered in a multimedia digital library.
2. Differentiate between the traditional ways of delivering library services from the modern ways of information service delivery in libraries.

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UNIT 2:   COMPETENCIES AND SKILLS OF MULTIMEDIA LIBRARIANS AND USERS

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 References/Further Reading

1.0 INTRODUCTION

In this unit we shall be discussing the competencies and skills that librarians need to possess in order to function effectively in the library of the 21st century. Also the different ways/methods of acquiring these skills will be discussed.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- Discuss the various competencies/ skills of a 21st century librarian
- Explain the various methods of acquiring the needed skills of 21st century librarian.

3.0 MAIN CONTENT

3.1 Competencies of Multimedia Librarian

There are specific skills required of a librarian to function effectively in the modern library environment. Furthermore, multimedia librarian needs to possess some basic competencies to improve performance and service delivery. According to Business

Dictionary, competence implies the sufficiency of skills and knowledge that will afford someone the opportunity to deliver service in a variety of circumstances. In the words of Marshall et al (2003), competencies can be considered as the interplay of knowledge, skills and attitudes that are required to effectively perform in a job. The authors identified two major types of competencies for librarians to function effectively. The first form of professional competence that should be acquired by librarians has to do with knowledge in information resources, information access, ICT utilisation and information services that are strategic in the provision of modern library services to the 21st Century audience. The other has to do with personal competencies which covers attitudes and values "that enable librarians to work effectively, be good communicators, be able to focus on continuing learning throughout their careers; demonstrate the value-added nature of their contributions and survive in the new world of work" (Marshal et.al. 2003). Orme (2008) also categorized skills into generic, personal and professional. The three most regular skills in each category were stated as follows: (a) Generic: i.e. interpersonal/communication; general computing and teamwork; (b) Professional: i.e., professional related experience; customer service; chartered librarian; cataloguing, classification and metadata and (c) Personal: i.e. enthusiasm; flexibility and self-motivation. These competencies are essential as 21st century librarians who have to contend with new emerging transformation technologies.

Burke (2009) was also of the opinion that regular training remains crucial to the successful utilisation of electronic resources within the library system. Technological skills like E-mail management skills; Word Processing Skills; Microsoft Excel skills; CDROM/ DVD Search; Scanners and similar devices; Creating online instructional materials/products; Network management; Computer programming, Creating and updating Institutional OPAC are some of the competencies that should be acquired by librarians to function effectively in the 21st Century library setting. The implication is that librarians need to actively participate in training that will bring them up-to-speed in the use of modern technology and software that will assist in the management of information and resources on the internet. These skills are important to manage internet-based resources that are now being used by the instructions and students.

According to Orme (2008), generic skills will equip different categories of librarians with requisite competencies, with a view to making them more effective managers of internet-based resources and information. These technological skills are pre-requisite in the modern library environment, where information and resources are largely domiciled on the internet. The implication is that, any librarian without these competencies will not be able to offer the required services to the students in this digital age. With the advancement in technology and innovations across the globe, it becomes imperative for librarians to be equipped with these competencies so as to handle large volume of information that are domiciled on the internet. When librarians acquire these competencies, they will be in the best position to assist students and other library users to search for relevant information anytime, anywhere. This allows them to discharge their duties more efficiently within the system.

3.2 Methods of Acquisition of Librarians Competencies

Technology has pervaded all aspects of the instructional system and the library setting is not left out of this revolution. Technology has impacted, positively, the structure of the library and ways information is being made available to the students and other library users. This implies that library personnel need to be adequately trained to acquire relevant competencies for effective service delivery. It has been established in literature that the efficiency in service delivery within the library system largely depends on the competencies of the staff that will provide information to the users on how to search for information and utilise such adequately. This could be facilitated with regular training on the use of modern technology within library system. In the words of Adomi & Famola (2013), the professional development is expected to be an integral component of the librarian education at all levels. You need to note that the library and information science is a strategic profession that is service oriented. Therefore, there is a need for regular training to bring personnel up-to-speed in the areas of technology use for information search and retrieval. This professional development is strategic for librarians to acquire relevant knowledge and competencies that have not been met during the formal education programme or on-the job- training. This is quite important due to the increasing impact of technology on the provision of library services at all levels of education. Elkin (1994) stressed the

need for continuing education in the modern information environment, pointing out that education and training must become a continuous lifelong process to keep abreast of changes as professional knowledge is becoming increasingly complex and specialized so that individuals need constant updating to keep in touch with their area of specialization. Nyamboga (2004) stressed the need for training library users to make appropriate use of resources made available in libraries. Srivastava and Srivastava (2004) revealed that librarians need opportunities for higher education and opportunities for attending conferences.

Aina (1993) evaluated the curricula of library schools in Africa to know whether their courses were relevant to the emerging library and information science market, based on a standard list of topics ranging from computer technology, information and records management to information repackaging and journalism. He recommended that funding agencies should provide assistance in the training of information professionals in Africa by sponsoring visiting lecturers and scholars to training institutions where these lack skilled workforce to teach certain courses and make the necessary equipment available. Flatley and Weber (2004) also suggested that, it is importance for librarians to keep abreast of the profession as it changes rapidly and listed ways of achieving this as: attending professional workshops, lectures seminars etc.

Listed below are ways librarians can acquire these competencies:
- Professional workshop
- Seminars
- Lectures
- Training by library bodies
- Formal education
- Distance learning

3.3 Librarians' Job Titles

Below is a list of multimedia-based librarian job titles as identified by Shahbazi & Hedayati (2013):

1 Data librarian

2 Database librarians

3 Digital and web services librarians

4 Digital archivists

5 Digital asset librarians

6 Digital collections librarian

7 Digital initiatives librarian

8 Digital librarians

9 Digital media librarians

10 Digital resources librarian

11 Digital services librarians

12 Digital system librarians

13 Director of library and information technology

14 Distance services librarians

15 Electronic information librarians

16 Electronic resources librarian

17 Electronic resources management

18 Electronic services librarians

19 Electronic/web services librarian

20 Emerging technologies librarian

21 E-resources librarians

22 Global data librarians

23 Head of systems, university libraries

24 Head of web services, library

25 Information literacy librarians

26 Information services librarians

27 Information technology librarians

28 Information technology managers, Library

29 Instructional technology librarians

30 Integrated technologies librarian

31 Library systems programmer/analyst

32 Media asset librarians

33 Media services librarians

34 Metadata librarians

35 Metadata librarian/cataloguer

36 Online librarians

37 Reference and electronic resources librarian

38 Resource sharing specialists

39 Software librarians

40 Systems and web librarian

41 Systems librarian

42 Systems librarian/web librarian

43 Systems/web services librarian

44 Technology librarians

45 Web and user interface librarian

46 Web librarians

47 Web librarian/E-resources librarian

48 Web services librarians

Librarians and other information professionals are bound to fail and perhaps fade out if they refused to undergo retraining to enhance their skills (Patel & Bhavsar, 2012). They have no option but to acquire these skills through the use of self-learning tools and attending conferences, seminars, workshops and other short time training. Librarians need to equip themselves with skills that will enable them handle future challenges as the information world is ever changing. They should bear in mind that there are other competitors ready to replace them if they refuse to move with change (Pashtounizadeh & Mansouri, 2008).

3.4 List of Competences/Skills

Professional competencies acquired from library school

- Information handling skills
- Training and facilitating skills

- Evaluation skills

- Cataloguing &classification skills

- Indexing and abstracting skills

- Enquiry work

- User education

IT Competencies

The following are the IT competencies that should be acquired by librarians**:**

- Programming Language

- Networking

- Web development

- System development

- System application

- e-mail management skills

- Microsoft word (words processing skills)

- Microsoft access (database management skills)

- Microsoft excel (spreadsheet skills)

- Power point (presentation skills)

- Use of portable document format (PDF) software

- Web searching skills

- Searching library database

- Using an integrated library system

- Use of digital camera for digitization

- Web navigating skills

- Teaching others to use technology

- File management/ operating systems navigation skills

- Troubleshooting technology

- CD-Rom/DVD search

- Scanners & similar devices

- Creating online instructional materials/products

- How to cite & evaluate internet resources
- Installing software
- Troubleshooting printing problems
- Web design
- Instant messaging
- Computer security knowledge
- Connecting patron's laptop to the library wireless
- Blogging
- Wiki
- Installing printer, scanner & computer systems
- Graphic design
- Network management
- Computer programming
- Creating & updating institutional OPAC

Generic Competencies

Listed below are some generic competencies that will help librarians to excel:

- Communication/interpersonal competency
- Leadership competency
- Management competency
- Creativity/innovative competency
- Analytical/critical thinking competency
- Stress/emotional management competency
- Information literacy competency
- Teamwork
- Ethics and social responsibility

4.0 CONCLUSION

Library schools should put into consideration the rapid changes in the job market for librarians and enrich their programme design/content. This will prepare their students for challenges due to the advent of multimedia and other technologies.

Practicing librarians should improve on themselves by embracing the different methods (such as conferences etc.) identified to acquire needed skills.

5.0 SUMMARY

In this unit, we have discussed the various competencies needed by 21st century librarians to function effectively. These competencies are grouped into three: professional; IT and Generic competences. Also discussed are ways of acquiring these skills such as conferences, workshops, lectures and formal education etc.

6.0 TUTOR MARKED ASSIGNMENT

1. Discuss the various competencies/skills that a 21st century librarian may need.
2. List the various job titles for the present-day librarians and ways of acquiring the needed skills.

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MODULE 4:   MULTIMEDIA SYSTEMS

Unit 1:   Types of Multimedia systems

Unit 2:   Evaluation of Multimedia Systems

Unit 3:   Challenges/Limitations of Multimedia Technologies in   Library and Information Centres in Nigeria

UNIT 1: TYPES OF MULTIMEDIA SYSTEMS

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content

       3.1 Definition and Categories of Multimedia systems

       3.2   Components of multimedia Technology

       3.3 Types of Multimedia Systems

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

7.0 References/Further Reading

1.0 INTRODUCTION

There are various multimedia systems applications used in the various sections of the library for different library operations and services. For you in library school, you have to be conversant with them and be able to evaluate them. You also need to know the limitations of multimedia technologies. All these issues will be extensively discussed in this module. In this unit you shall learn the various categories of media, the components i.e., inputs/output devices and types of multimedia systems.

2.0 OBJECTIVES

    At the end of this unit, you should be able to:

- Explain the key properties of a multimedia system.
- Discuss the different categories of multimedia systems.
- List the components of multimedia systems.
- Explain the various types of multimedia systems.

3.0 MAIN CONTENT

3.1 Definition and categories of Multimedia Systems

Generally, a multimedia system is a combination of computer-controlled, integrated production, manipulation, presentation, storage and communication of independent information, which is usually encoded through continuous (time-dependent) and a discrete (time-independent) medium. The key properties of a multimedia system are:

1)   Discrete and continuous media

2)   Independent media: Each media can be separated

3)   Computer – controlled systems

4)   Integration

Categories of Multimedia systems

Multimedia has to do with multiple forms of media resources that are integrated together to enhance information delivery in different areas of human endeavours. For instance, a web page with an animation and images is a form of multimedia that can be used to disseminate information to the audience. Different kinds of data can be categorised as multimedia. The basic types data that can be categorised as multimedia include: Text, Graphics, Audio, Animation, Video and Graphic Objects.

These multimedia resources have become strategic in different aspects of human endeavours including culture, politics and education. The resources can be used to facilitate information delivery in all sectors of the economy. The impact of multimedia is quite prominent in the education setting as learners can learn better with these resources. Also, teacher can leverage the capabilities of multimedia resources to

present the content more precisely and accurately. In practical terms, different types of information can be categorized as multimedia. This includes information coming from television, radio, instructional radio, movies, magazines and web pages, to inform and entertain the general public. Advertisement sector is a critical area that has enjoyed the advantages of multimedia in information delivery.

In the education setting, multimedia has pervaded all aspects of instructional process. The teaching and learning processes are increasingly been influenced with the use of multimedia resources to engage different categories of students. The teacher requires the capabilities of multimedia to deliver instructional content in a more realistic way. Students can also learn effectively with the power of multimedia resources like videos, images and voiceover. This makes teaching-learning process more real and connected to real-life situation.

Types of Multimedia

Text: The form in which the text can be stored can vary greatly. In addition to ASCII based files, text is typically stored in processor files, spreadsheets, databases and annotations on more general multimedia objects. With availability and proliferation of GUIs, text fonts the job of storing text is becoming complex allowing special effects (colour, shades...). Text, Start

Graphics: There is great variance in the quality and size of storage (Image file formats) for still images (Bitmap - gif, jpg, bmp) (Vector - svg, pdf, swf, ps). Digitalized images are sequence of pixels that represents a region in the user's graphical display.

Audio: An increasingly popular data type (audio file format) being integrated in most of applications is Audio. It's quite space intensive. One minute of sound can take up to 2-3 Mbs of space. Several techniques are used to compress it in suitable format.

Animation: It involves the appearance of motion caused by displaying still images one after another. Often, animation is used for entertainment purposes. In addition to its use for entertainment, animation is considered a form of art. It is often displayed

and celebrated in film festivals throughout the world. Also used for educational purposes.

Video: One on the most space consuming multimedia data type is digitalized video. The digitalized videos are stored as sequence of frames. Depending upon its resolution and size a single frame can consume up to 1 MB. Also, to have realistic video playback, the transmission, compression, and decompression of digitalized require continuous transfer rate. See also: iMovie, Codec, Guide, Video Tools and Software

Graphic Graphics (Objects): These consist of special data structures used to define 2D & 3D shapes through which we can define multimedia objects. These include various formats used by image, video editing applications.

3.2 Components of multimedia Technology

Multimedia technology is made up of two components namely input and output devices.

Input Devices

1. Keyboard, Mouse

2. Graphics tablets

3. Scanner

4. Digital Camera

5. Touch screen

6. Analogue audio input from microphone and audio player

7. Networking support for distribution

8. Modem

Output Devices

1) High Resolution Screen – Output video

2)   Speakers, amplifier or tape devices – output audio

3)   Network with capacity at 10 million bit/second

4)   Analog modem

5)   Printer

3.3 Types of Multimedia Systems

There are various types of library multimedia systems as listed below:

1)   Multimedia library information kiosks/walk-through programmes

2)   Instruction Training Systems

3)   Self Learning Tools

4)   Digital/Electronic Libraries

5)   Multimedia Databases

6)   Multimedia Information Retrieval System

7)   Multimedia Catalogues

8)   Multimedia Information Resources

9)   Geographical Information Systems (GIS)

10)   Electronic Publishing

11)   Multimedia Archival System

12)   Multimedia use in Museum Libraries

13)   Call Number Directories

1) Multimedia Library Information Kiosks/Walk through Programmes

This software could be installed on any normal windows PC in the library. The operating system of this application is automatically protected against abuse and

unauthorized access. The contents are customized to suit a particular library's need. Its content and menu can be easily updated or enhanced from a remote PC with the included Kiosk Assistant Application or by using a USB flash drive to update the terminal with the latest content. The multimedia library information Kiosks can be used in the library to improve accessibility of library collections and services. It is used to create electronic library guides. It is highly useful for quick reference services and some libraries have used it to design walk-through programmes on some topics. Examples are:

a)   Electronic Library Guides

b)   Multimedia Database of Tourist Information Development

2) Library Instruction Training System

Instruction training systems have become common especially in many fields such as in business (Marketing) and in education. In the library instruction training system is used to train librarians on new skills and users on the library's collections, services and the skill they need to fully enjoy library resources and facilities. Examples are:

a)   Teaching Mini Medline

b)   STAR (Student Tutorial Access & Resources)

c)   Illuminate

d)   Tour of the Internet

e)   Catskills

3) Self Learning Tools

Self learning tools provide learners the opportunity of learning at their own pace examples are CD-ROMs that present the nuts-and-bolts tasks required to keep the house/machine functioning. Other examples are House Repair Encyclopaedia which repair encyclopaedia that are compendium of well-illustrated repair guidelines for how to:

* Stop water leakage
* Perform electrical wiring
* Pour concrete
* Fix roofs, patch damaged walls and ceilings.

Presentations are in multimedia format such as animation, sound and video. All of these self learning tools provide for better information than any individual can get from printed books. Some other self learning tools such as the Internet Resource Guide describe the various services available on the internet.

In the library and information centres there are some sell learning tools that are commonly used by their patrons such as:

* National Geographic's Animal Samplings
* ABC Golf
* Music Data City
* Cartoon Jukebox (an interactive colouring book for children)
* Magic flute

There are self learning tools for those desiring to learn foreign languages in the market and libraries. Examples are:

* Think and talk French/Spanish/German
* Introduction to Russian and Chinese etc.

Users of these tools find them interesting because of the integration of graphics, photographs, music, speech and video in teaching these languages.

4) Digital/Electronic Libraries

Digital libraries support the provision of smooth integration (blending) between different tools, applications and systems. It contains data in various forms and information seeking is efficient and effective. Also digital libraries system can be expanded to meet future needs. Digital resources could be in form of:

* Digital books

* Scanned images

* Graphics

* Data

* Digitized A-V clips etc

Most university libraries such as Kenneth Dike library of University of Ibadan, University of Lagos Library have digital/electronic section in other words these libraries are hybrid

5) Multimedia Databases

Libraries are developing their own database by collecting and integrating information from various sources that are in different forms for daily use and archiving.

6) Multimedia Information Retrieval System

There is information explosion due to the ability to easily generate and disseminate information using the internet. In general, most information retrieval systems are textual, for example, the web search engines are text retrieval systems. Text retrieval systems are already established. According Tang & Furner (1999) multimedia retrieval system is less established.

- **Image Data Retrieval**

  The image data retrieval system is best developed than audio and video retrieval systems. A good example is the Image Query System which was the first deployed multi-user networked digital image database system developed in 1986. Over the years, this system has become well established.

- **Audio Data Retrieval System**

  Audio data retrieval system just like the image data retrieval system is not text-based. It has issues with standards, attribute classification and evaluation. It also poses problems in research basically because it is aural and not visual. The fact that it is aural makes it time dependent. It may also have issues rooted in the way it is presented.

- **Video Data Retrieval**

Video data retrieval system just like the image data retrieval system is basically visual. In most cases videos have aural system integrated into them. Video data retrieval system is also time bound and also shares the issues posed in Image and Audio Systems since it is both visual and aural.

- **Hypermedia Information Retrieval System (HIRS)**

This is a hypertext annotated bibliography of hypertext/hypermedia information (Ramaiah, 1998). It is compiled from different sources such as periodicals, academic Journals, and online informational databases for educational purpose and for training. Hyper KRS is a commercial package in this category which can be purchased and used in libraries to develop their own hypermedia-based information retrieval systems.

7) Multimedia Catalogues

Multimedia catalogues have helped to solve the problem posed by the traditional card catalogue which is characterized by large volumes of printed cards and several cabinets occupying large amount of storage space. Interactive multimedia catalogues offer high volume of information on a small disk. Publishing houses today employ this to market their publications in interactive multimedia CD-ROMs. Other examples are CD-ROM catalogue shopping, SW Catalogues, Macromedia Showcase, Silver Platter Directory of Electronic Resources etc. Some public libraries using HyperCard software and Hyper Cataloguer have designed catalogues for children.

8) Multimedia Information Resources

Multimedia Information Resources/Systems available in libraries are:

∗ CD – ROMs

∗ Video disc (VD)

∗ Laser discs (LD)

∗ Audio and Video cassettes

∗ Web

∗ Databases on servers

∗ Digital video

Reference books such as encyclopaedias, dictionaries, handbooks etc are now available in the market in both print and multimedia formats. Below are some examples.

- **Encyclopedias**: Crompton's interactive Encyclopedia, Britannica CD, Britannica Video CD, Encyclopedias, Americana, Crolier Multimedia Encyclopedia, World Book Multimedia Encyclopedia, Microsoft Encarta etc.

- **Dictionaries and Directories**: Oxford English Dictionary, Webster English Dictionary, The Dictionary of Living World, National Geographic's Mammals, Microsoft Dinosaurs etc.

- **Reference Manual**: MIT movie manual, Interactive Graphic Documents. The Manual of Medical Therapeutics etc.

- **Year Books**: The Guinness Disk of Records

- **Reference Books**: Earth Quest, World Climate Disc, Interactive Periodic Table etc.

- **Electronic Books**: Manual of Medical Therapeutics, The Electronic Whole Earth Catalogue, Microsoft Musical Instruments, Introduction to Classical Music, The Oxford Textbook of Medicine on CD-ROM etc.

- **Electronic Newspapers/Journals**: Nigerian dailies are available online in integrated format. Examples are Daily Trust, Punch, The Guardian, Tribune, This Day etc.

- **Multimedia Fiction**: Several multimedia fiction books are available for all ages. Example is the manhole etc.

9) Geographical Information System (GIS)

Geographical Information Systems (GIS) apply multimedia such as video, audio, visuals etc. to the task of capturing, storing, manipulating, analyzing, modelling and displaying information about the surface of the Earth and the phenomena distributed on it. They may be many other forms of software that are capable of handling geographical information but in limited ways. GIS is the only form designed expressly

for this purpose, with a full range of necessary data structures and functions. For example, the National Capital Planning Commission (NCPC), Washington, DC uses online video clips and images of buildings along with their maps. Other examples are Bangalore online and Escorts both in India, developed geographical information software. These tools are easily available for libraries to purchase. In particular GIS reference tools for libraries are:

* Quick Reference Atlas
* 3D Atlas
* World Atlas MPC
* PC Globe Maps 'n' Facts

10) Electronic Publishing Information

Hawkins, Smith, Dietlrin & Rindfuss (1994) defined electronic publishing as "the use of electronic media, computers and telecommunications to deliver information to users in electronic form or from electronic sources''. Electronic publishing does not involve paper in transferring information between end users. Examples are electronic bulletin boards, online newspapers, books, email, electronic journals etc. Multimedia tools and CD-writers have made publishing of information easy in the libraries for their users. Libraries for example can now publish their special collections, image databases, OPACs etc on multimedia CD-ROMs.

11) Multimedia Archival System

 Vandika, Kurniawan and Saputra (2014) defined Electronic Archive as a document written (letter, certificates, etc), oral (speeches, lectures, etc), or pictorial (pictures, movies, etc) from the time past which is stored via electronic media (tape, videotape, computer, email etc). Example of an electronic archive media is the Google Drive.

According to Assagaf (2012), the Google cloud storage drive is a service from Google launched in April 2012. Its main purpose is to allow users to store files on the internet on the storage provided by Google. Once these files are stored in Google cloud,

owners can assess their files anytime and anywhere through a desktop computer, a laptop, a tablet computer or a Smartphone. These files can also be shared with others.

National Museums, Publishing Houses, Movie Production Companies etc develop their own Multimedia Archival System using HyperCard. For example, ABC News has a very large size Mac-based video archival library for developing hypermedia applications. Another example is Project Jukebox which is a HyperCard – based multimedia archival system for archiving multimedia information resources in the library.

12) Multimedia Use in Museum Libraries

Museums collect mostly unique, monetarily, culturally and historically valuable objects kept in secured storage, and not open for public access. In many museums, the information searching systems are designed for staff and not for general public (Diamant – Cohen & Sherman, 2003). Museum libraries books and archival collections are basically meant for research and exhibitions. Many libraries are using multimedia in their libraries for providing information services to their users. Some examples of multimedia museum are:

* Interactive Multimedia guide of the National Museum of Natural History designed with Director
* Interactive multimedia guide of the National Rail Museum designed with ToolBook

13) Call Number Directories

This directory is designed with Macintosh's HyperCard. This programme helps users to locate information and the physical locations of the resources on different floors by showing the pictures of those floors, stacks etc. example is the Science and Engineering library of India.

4.0 CONCLUSION

The various library multimedia systems have positively imparted library operations and services thus making librarians more efficient and effective in their information service delivery. All 21st century libraries must aspire to incorporate these systems in their operations and services.

5.0 SUMMARY

In this unit, we have discussed the various multimedia systems used in libraries of today such as: Multimedia library information kiosks/walk-through programmes, Instruction training systems, Self learning tools, Digital /electronic libraries, Multimedia databases, Multimedia information retrieval system, Multimedia catalogues, Multimedia information resources, Geographical information systems, Electronic publishing, multimedia archival system, Multimedia use in museum libraries, and Call number directories. We have seen how all these systems have improved library operations and services

6.0 TUTOR MARKED ASSAIGNMENT

1. Identify how the multimedia library information kiosks/walk-through programmes has been useful in the library?
2. Explain how the self learning tool can be used to enhance library services?
3. Distinguish between instruction training system and self learning tools?

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UNIT 2:   EVALUATION OF MULTIMEDIA SYSTEMS

CONTENTS

1.0 INTRODUCTION

In the last unit we discussed the various types of library multimedia systems in the market and in this unit, you shall learn how to evaluate these systems in order to make a good choice.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- Evaluate any multimedia system of your choice.
- Differentiate between formative and summative evaluation.

3.0 MAIN CONTENT

3.1 Evaluating Multimedia Systems

Evaluation has to do with assessment through testing to ascertain if the set objectives of the systems under evaluation were attained. All software must have a set objective(s) and the user/learner must be tested to ensure that the set objectives are

fulfilled. Sometimes you may have to assess the contents of the software/system. Assessment of software should be carried out at two levels. First, is the level of content and second, is the level of technology. The content is very important as the technology is just a channel of conveying the content. It is important to note that the technology must not be too sophisticated for users/learners as learners are at different levels in technological skills. Optimum use of the technology is desirable because the way content is conveyed can influence comprehension.

The ability to integrate video, text, audio, graphics etc is the strength of multimedia. The fact is that individuals learn using different methods or medium, therefore, no one single method or medium is appropriate for all individuals. A perfect condition would have been to provide numerous options to learners which are cumbersome. However, if numerous options cannot be made available, a number of alternative options based on various learning approaches must be given. Multimedia programmes offer these options.

3.2   Formative Evaluation

Formative evaluation is a continuous assessment in the course of the development of multimedia. This assessment or continuous feedback will help to form decisions that will affect various aspect of the software. Feedbacks which may be quantitative or qualitative become the guidelines for the development of the software. No single software can provide all answers to all topics treated. So, every software developer must delimit the scope of the software. In other words, software must have its objectives. Formative evaluation is useful during and before the development of the software.

Some of the questions that need to be answered in formative evaluation are: (1) who are the target users of this software and what is the level of the target users? (2) What is the level of computer familiarity expected of the learners? (3) What would be the objectives (in terms of content) to be covered by the programme? (4) How would the programme be used? (A) As supplementary to classroom teaching? (B) As

independent programme providing complete courseware. The answers to these questions will affect the content and selection of technology.

3.3 Summative Evaluation

Summative evaluation takes place at the end of the programme and assesses the overall impact of the software on learning. It targets the end- users of the software in assessing the educational/entertainment impact on them and also the ease of use or design features of the software. The suggestions on the basis of summative evaluation may be used for short- term or long-term changes in the programme. Short-term changes may be as a result of your own observation or even from the feedbacks from users while the long –term changes may occur due to curriculum designer's decisions and also based on suggestions by organizations/institutions using the software.

3.4   Criteria for Evaluating an Authoring Tool

1. **Ease of Use:** Non-programmers such as librarians do not have to learn a programming language to develop multimedia courseware.
2. **Availability of ready-made templates:** It should have an established template with popular buttons/signs and navigation tools.
3. **Compatibility:** it should be compatible with the World Wide Web.
4. **Availability of online-assistance:** There should be an online assistance and learning aids.

3.5   User Interface Principles

There is a platform made for users to interact with the system. This interface is assessed based on:

1. **Consistency:** The interface should be in harmony with all screens in that software. The same words or commands should perform the same functions throughout the user interface.
2. **Clarity:** All labels on all icons should be clear for easy understanding and use.
3. **Context:** All the activities on the interface should be structured in such a way that they all have relevance to the topic treated by the software and not out of

context. All activities must have bearing with the topic of discussion at every step.

4. **Navigation:** Users should be able to move freely within menus, files and other screens in the system.

5. **Ease of Learning**: The system should create avenues for users to learn by giving instructions and support information at every step and creating a help function buttons for inexperience and experience users to speed up interaction with the interface.

6. **Flexibility:** The users should be given authority to navigate through out all the sections without limitations. For example, users should be able to access any of the lessons, sections and pages of the programme.

7. **Personalization:** users should be able to make out their own personal or individual learning from the system. Users can choose their display options.

4.0 CONCLUSION

Evaluation is not for formalities but for the sake of improving available multimedia systems by correcting mistakes, enriching the system to bring about lasting improvements on the general package. It is important for you to know whether or not the systems have impacted learning.

5.0 SUMMARY

In this unit, we have discussed the concept of evaluation, the need for evaluation and the two basic types of evaluation: formative and summative evaluation, the criteria for evaluating an authoring tool and user interface principles.

6.0   TUTOR MARKED ASSIGNMENT

1. Evaluate any multimedia system of your choice.
2. Differentiate between formative and summative evaluation.

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UNIT3: CHALLENGES/ LIMITATIONS OF MULTIMEDIA TECHNOLOGIES IN LIBRARIES

CONTENTS

1.0 INTRODUCTION

In the last unit we discussed how to evaluate multimedia systems. In this unit, we shall discuss the limitations/ challenges of multimedia technologies in libraries and in information centres.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- Identify limitation/ challenges that are rooted in the technology itself.
- Explain limitation/ challenges that are rooted in skill manpower.

3.0 MAIN CONTENT

3.1 Challenges of Multimedia Technologies

There are numerous advantages in the use of multimedia in different sectors of the society. Institutions and organizations though are willing to introduce multimedia into their operations but they are faced with some challenges. These challenges are in two folds: technology and skilled man power.

3.2 Technology Challenges

1. Setting up Cost: The initial set up cost is high. The hardware/software is expensive and not every individual or institution can afford it.

2. Copyright and Ownership: So many countries still lack the legal laws to protect multimedia products. From the onset, many multimedia products are produced with both original and non-original text, photos, music and other artist's work. Some of the issues include:

a)   The ownership of the intellectual property rights and a clear definition of public domain product.

b)   The liability of the developer(s) by a faulty product and the developer's right to gain from the product or its future use and reproduction.

c)   Variations of the original products and how it is treated and how to obtain third parties' permission to use copyright works and remuneration.

d)   How to prove ownership in case of unauthorized use (Partial or full)

e)   The lack of international means of protection from piracy and illegal use or reproduction of multimedia products across international borders.

3. Cross Platform: There is the problem of multimedia bandwidth requirements and digital media file sizes in taking multimedia across platforms. For instance, in taking text across platforms, you may have some issues such as character translation, fonts, styles, and size of displayed text. For graphics you may have some issues on some platforms such as Mac displays larger than UNIX and PC. For video, you may have issues such as gamma (that affect how dark or light an image is displayed). Also, you may have the issue of compression and compatible applications that recognize image types and colour representations. For Audio you may have issues such as file formats, and the search of suitable playing utilities. You must also consider down sampling and sampling of audio, as well as the quality of sound and synchronization between video and audio.

4. Unavailability of requisite hard/software to develop multimedia contents for the library: The suitable software to integrate, control, coordinate, manage and adapt different media is not available. The manufacturers hardly produce supportive software to assist in authoring, composition and production of multimedia content

5. Inadequate technology support for data storage and manipulation: There is always a problem of storage space after some time and no provision is made to assist in solving this problem.

6. Inadequate and poor search patterns: There are no standard search patterns for information retrieval in multimedia databases. Some search patterns are poorly designed for effective and efficient searches and information retrieval.

7. Lack of software for cooperate decision making and work: Group decision and work is vital in every organization. The software and support technology to support group decision and work is lacking.

3.3   Skilled Manpower Challenges

Apart from challenges inherent in the technology itself, there are other challenges such as:

1. Lack of skilled manpower: This deals with the problem of lack of training in operating multimedia technologies and in using the software in developing multimedia products. There is also the problem of lack of knowledge on how to maintain multimedia equipment.

2. Much Labour: It requires much human labour and time in developing interactive multimedia content.

3. Multi – disciplinary knowledge demand: The creation of multimedia content requires multi-disciplinary skills which is lacking.

4. Lack of standardization: standards have not been established by any formal body on multimedia hardware/software and products. The effectiveness of multimedia

products will depend on some factors: The first question is, are all software well developed? How good are available multimedia products?

5. Lack of Well-qualified Management and Maintenance Personnel: The rapid development of high-level multimedia technology equipment has led to a need for high-quality personnel to manage and maintain the multimedia equipment and devices. For instance, the maintenance staff should know when the equipment is functioning properly and should update software in accordance to manufacturers' standards.

In Nigeria in general, there is a lack of maintenance culture which pervades all sectors. These very expensive multimedia gadgets are left to decay due to lack of long-term and systematic maintenance.

For optimum use of multimedia devices, it is advisable to:

1. Strengthened Maintenance and Management Concept: You mustn't wait until multimedia equipment breaks down before it is maintained.

2. Strengthened Regulations and Policies on the use

3. Training: There should create an avenue for technical staff to constantly improve their professional skill. There may be need to train library staff and users as well.

4. Avoid Erratic Power Supply: The management may decide to be on generator to ensure that power supply is not erratic but steady. Erratic power supply damages equipment.

5. Improved funding: It is not enough to procure equipment; there should be special budget for maintenance.

4.0 CONCLUSION

The manifold benefits of multimedia use in libraries cannot be fully tapped due to some challenges and limitations. Stakeholders therefore should find ways of

overcoming these challenges as multimedia has come to stay. It should be the constraints to its use that must be removed.

5.0 SUMMARY

In this unit, we have discussed the various limitations/ challenges in using multimedia in libraries and information centres. These challenges have been grouped into two broad headings: Technology challenges and Skill manpower challenges.

6.0   TUTOR MARKED ASSIGNMENT

1. Explain the technological challenges in using multimedia systems in libraries.
2. Differentiate between technology challenges and manpower challenges in the use of multimedia systems/software.

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MODULE 5: MULTIMEDIA PRESENTATIONS AND DESIGN PRODUCTION TECHNIQUES

Unit 1:   Multimedia Presentation

Unit 2: Multimedia in PowerPoint Presentations

UNIT 1: MULTIMEDIA PRESENTATION

CONTENTS

1.0 Introduction

2.0 Objectives

3.0 Main Content

    3.1 Multimedia Presentations

     3.2 Multimedia Effects

    3.3 Authoring Presentations

    3.4 Authoring Styles

     3.5 Features of Good Presentation

     3.6 Software Packages

4.0 Conclusion

5.0 Summary

6.0 Tutor Marked Assignment

5.0 References/ Further Reading

1.0 INTRODUCTION

As a student, you may have to use multimedia to present your term papers/ project in the course of your study. Also, library users may have need of using multimedia in their different presentations and may require the assistance of a librarian to do so. This module will teach you how to handle such request and be of immense help to library users.

Students learn better when the channel/medium of transmitting contents to them is a well-designed multimedia. In this unit, you will learn how to present contents using multimedia and the features of good presentation.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- Identify Multimedia effects on students learning.
- Discuss the different ways of authoring presentations
- Identify the various authoring styles
- Explain the different features of a good presentation
- Discuss the various software packages for presentation.

3.0   MAIN CONTENT

3.1 Multimedia Presentations

It has been established that by combining pictures with words, deeper learning is fostered in students (Mayer, 2003). This is because, multimedia instruction messages can be designed in ways that are consistent with how people learn, and thus can serve as aids to human learning (Mayer, 2001). Another reason is that students learn more deeply from well designed multimedia presentations than from traditional verbal-only messages. Also, it helps to improve performance on tests of problem-solving transfer (Mayer, 2001). In short, the promise of multimedia learning is that you can tap the power of visual and verbal forms of expression in the service of promoting understanding (Mayer, 2003).

 Most presenters today make use of Computer-generated visuals which can enhance the effectiveness, clarity and legibility of presentation as opposed to overheads or chalkboard materials. Technology aided presentations allows last minute changes, can be easily updated, revised or customized to a specific group and helps the audience to understand and remember the material better. A simple Computer based Presentation will use slides. Information on each slide can be presented in form of text mixed with images that may be animated accompanied by audio. The slide may also contain drawings, maps which can be drawn or imported from other applications or screen captures. Slides can be prepared using Microsoft Power Point which is a presentation graphics package. Slides may also be graphical objects cut from any application.

Clipart and cartoons can add visual interest and humour to the presentation. Programs like Power Point provide a box to add notes to accompany each slide.

In most cases presenters use slides as visual summaries of findings to supplement their oral presentation. The slides in this instance are accompanied by carefully constructed essay or argument developed in a word processor, laying out the key ideas in considerable detail and depth. Bullet slides do not provide interaction. Even though Power Point is easy to use, it lacks in interaction, sound control and drawing facilities and animation.

3.2 Multimedia Effects

1. Contiguity effect

The spatial contiguity effect is that students learn more deeply from multimedia explanations when corresponding words and pictures are presented near to rather than far from each other on the page or screen (Mayer, 2003).

- Contiguity Design Principle: Place words near corresponding pictures.
- Spatial contiguity principle: Learning is improved when images and corresponding words are spatially integrated. For example, legends should be close to the corresponding picture elements. (Rebetez, 2006)
- Temporal contiguity principle: Learning is improved when visual and verbal elements are presented together. (Rebetez, 2006)

2. Personalization

"The personalization effect is that students learn more deeply from a multimedia explanation when the words are presented in conversational style rather than formal style." (Mayer, 2003)

- Design principle: Use conversational style for words.

3. Coherence effect

"The coherence effect refers to the finding that students learn more deeply from a multimedia explanation when extraneous material is excluded rather than included." (Mayer, 2003)

- Coherence Design Principle: Eliminate extraneous words and pictures
- Learning is better when words, images and sounds not directly useful for comprehension are removed. Anecdotes, illustrations and ambient music are example of often unnecessary elements. (Rebetez, 2006)

4. Modality

Students learn better when their visual/pictorial channel is not overloaded (i.e., when they must process words and graphics simultaneously at rapid pace) (Clark and Mayer, 2003)

- Modality design principle: Present Words as speech rather than onscreen text
- Animated pictures presented with an audio commentary are better understood than accompanied with on screen text. (Rebetez, 2006)

5. Redundancy

- Redundancy design principle: Presenting words in both text and audio narration can hurt learning
- Learning is better when presenting an animation with an audio commentary than an animation, its commentary and the corresponding text. (Rebetez, 2006)

3.3 Authoring Presentations

Multimedia presentation is a transition from the traditional method of presentation. This type of presentation which is the hall mark of modern-day technology is usually used at meetings, conferences, conventions and training sessions. There are three different programming Models that are used in multimedia authoring as given below:

1. **Simple Sequence:** In this model the Components are organized in some strict sequence and played back exactly in the same sequence.

2. **Control Flow:** This Model allows some form of choice in the presentation depending on some input from the presenter; the sequence of the presentation can thus be customized to their needs. This allows to access different areas of the presentation at the same time.

3. **Concurrent:** This allows different actions to be active in the different areas of the presentation at the same time.

3.4 Authoring Styles

Different authors use different styles as follows:

1. **Scripting language control:** This is close to real programming and is difficult.

2. **Iconic/Flow Control**: This is an iconic or visual form of programming and is the easiest.

3. **Frame control: this** is a combination of the above two.

4. **Hierarchical Object control:** This uses Object– Oriented Programming.

5. **Hyper media Linkage:** like "What you see is what you get" Web editing.

3.5 Features of Good Presentation

All good presentations are expected to have the following features**:**

- Placing elements in suitable locations
- Indexing the Presentation by Image Maps instead of texts.
- Creating dynamic slides.
- Managing colours.
- Supporting texts with animation
- Supporting images and graphics with animation
- Attaching sound.
- Using fancy transitions and eliminate distractions.
- Using predefined templates and creating own templates.

1.   Placing elements in suitable locations

The general rule is that visuals should be made horizontally (landscape) rather than vertically (portrait). This is because; the landscape orientation leads the viewer's eyes across the image and provides more room horizontally. More so, the bottom of the

projected image may not be visible from all parts of the room. Again, since the English language is read left to right, the arrangement should be designed to read left to right. When a visual is first shown, the eyes tend to land at the optical center of the screen, a spot slightly above and to the left of centre.

2. Indexing the Presentation by Image Maps

Since each slide is a separate movie file in this model a Master slide is created, which is used to index or refer all other files (slides). Each slide is referred by a hyperlink in the master slide. A hyperlink document is a document with text or images or animations as hyperlinks, which is activated when the presenter clicks on them. The area for hyperlinks may be fixed so that it is displayed along with all slides and each slide can be loaded in the remaining area.

3. Creating dynamic slides

In this presentation model each slide is created as a separate movie clip or movie (**.swf**) file (Sahlin, 2001). The size of the slide (movie), resolution, background and foreground colour is dynamically changed at run time. When a slide requires to refer another slide or an animation or a movie clip provided in other slide it can be displayed in a small popup window as shown in **Figure.1.**

Figure 1. A video clip

4. Managing colours

The colours must be distinct not only in hue, but also in brightness. Similarities and distinctions are shown by the use of colour. It is best to use consistent colours for the same element found at different places, which will prevent the listeners from memorizing the colour instead of the information. Even though the computer has the capability of producing 16.7 million colours, unless a full-colour photograph or picture is used it is recommended to use only three or four contrasting colours.

Fully saturated colours on a dark background may look snappy (lively) on the Computer Screen, but when projected in a dark room can be overwhelming. Bright colours are useful for highlighting important data or drawing attention to smaller objects. Softer colours work better for most observers.

Using a dark background with light text and images is advisable. However, when a dark background is used, you will probably find that the room needs to be darkened to get the full brilliance of the colours.

Computer display uses Red, Green and Blue (RGB) colours but Printed pages use Cyan, Yellow, Magenta, and Black (CMYK). CMY are primary colors and RGB are secondary colours. Warm colours (reds, yellows) may be used for foreground elements and Cool colours (blues, greens) for background. Pairs of primary colours have greatest contrast and provide good clarity and sharpness. But too much contrast will be confusing and overwhelming. Pairs of secondary colours have poor or least contrast and producing boring or bland effect. But lower contrast will be soothing and subtle

A complementary contrasting pairs can be found by choosing one of the secondary colours and one of the primary colours for example, Yellow / Blue, Red / Cyan, Magenta /Green.

5. Supporting texts with animation

Any software used for presentation should have word processing capability to some extent or it should allow importing text created in other word processors. Font sizes should range between 18 and 48 points. A size hierarchy for headings should be established and text making the most dominant items largest. Thousands of different typefaces or fonts are available. But this model advises to choose one or two that are easy to read. Two general classifications for type are Sans serif (plain) or serif (with the short cross-strokes). Sans serif typefaces are recommended because they do not have feet and hence easy to read.

Use capital letters (uppercase) for the first letter of the main words. Capital letters lack ascenders and descenders making them less distinctive and difficult to read. People tend to be slower readers when words are in uppercase because more than ninety five percent of printed material is lower case letters. Abbreviations should be avoided unless the audiences are familiar with the material. Usually punctuation marks (particularly periods and commas) serve no function and can be omitted.

Visuals should be kept simple and concise. The viewer has only a short time to view the visual while focusing on what the speaker is saying. A visual can be limited to less than 8 words on a line and less than 8 lines. Headings or titles should be kept to four words or less. The structure of the words should be similar.

- **Animated Bullets**

A bullet chart is an effective device to use on a visual when listing several points of information for discussion. Animated bullets make the presentation more attractive

- **Animated Text**

Builds are another way to make the viewers to focus on the specific point under discussion. A build expose one point or line at a time. However, the previous points still left on the visual can be shown in a lighter weight font or more neutral or lighter colour. When the last point of the presentation is reached, viewers will be able to view all the points on the slide at once. Builds can be easily created using Multimedia software with the help of tweening. Tweening can be created for animating words fly from the left/right/top/bottom, build from the centre, dissolve, appear from an image (morphing) etc.

6. **Supporting images and graphics with animation**

A picture is worth 10,000 words or more! Clip art or scanned art is useful in demonstrating or illustrating various points. However, do not use art for the sake of art; it should serve a direct purpose or function. Arrows and shadows can be used to direct the attention of listeners and the graphics need to be big and bold. Diagrams help the viewer understand ideas, facts, plans, concepts, processes, and sequences. Examples of diagrams are an organizational chart, a flow chart and a time line. Today's multimedia software has vector drawing facility, which helps to reduce the file size. Cartoons can easily be created using multimedia software. This software allows importing clip arts, pictures or work created in other programs.

- **Drawings**

Graphs show relationships, comparisons, and changes. A pie graph divides a whole into component parts. Bar graphs show relationships between two or more things. Line graphs show trends. The lines used for graphs need to be fairly bold. Graphs should not contain much detail and a table is probably a better choice if precise, quantitative data is to be shown.

- **Animated Graphics**

Presentation based on complex diagrams can be animated with highlights. Animated diagrams help the listeners to understand complex concepts or structures. Animation is the process of displaying a series of images one after another. Each image is called a frame. Animations are created in two important ways. The first way is to create images or objects for each frame and displaying

the frames at a particular speed. This method is called as Frame–by–Frame animation. This method involves more work and takes more time to complete the animation perfectly. But in the second method called Tweened animation, objects are created only for the first and last frames of the animation and the intermediate frames are automatically interpolated based on the object's size, colour etc. provided in the first frame and the last frame. Tweening smoothes out the big change by breaking it into little steps. By using the Tweened Animation the file size will be reduced because only the values that change between frames are stored in the file. But in Frame–by–Frame Animation the values for each and every frame are stored and the file size will become large.

- **3 D Graphics**

Real world objects are having 3 dimensions (3D) width (x), height (y) and depth (E). But Computer Monitors have only two dimensions width and height. So, to display 3D objects in monitors we should simulate 3D space or real space i.e. we should provide the illusion of depth on a flat surface. According to Reinhardt (2001), Flash has no true 3D art tools, but with the facilities provided like gradient colours, Soften Fill Edges you can simulate the depth to some extent. You can also use other 3D software that will import 2D vector graphics created in Flash and then give the depth from that 3D program. This method is called Extruding. If you are using 3D programs to create depth for objects and if you want to import those objects back to the Flash program, you should export the object from 3D program either in .EPS or .AI or PICT or .BMP or .DXF file format. You can use the following methods to create the illusion of depth in Flash.

- **Lighting:** User defined gradients can be created to provide lighting effect. This creates the illusion of spatial depth.

• **Texture Mapping:** Changing the alpha value, stacking the objects one above other and creating a colour contrast, using bitmaps or texture for painting the objects etc., will be useful to create realistic effects.

• **Wire frame:** In this method lines are used to create the illusion of depth, E.g.: Globe. Shadow effects may also be used to create 3D effects.

• **Inverse Kinematics:** Observing how the objects appear when they are in motion and creating a model for each position will be useful to create rotating 3D objects, moving 3D objects etc.

7. Attaching sound

Generally, a movie with audio effect will be more interesting than a silent movie. But adding sound to the presentation will increase the presentation file size. This is because the sound file is embedded in the presentation file itself. Flash MX provides facilities to add, edit different sounds and compress the sounds in different formats (Sahlin, 2001).

Factors involved in Sound

The following factors are to be considered for every Sound:

1) Sample Rate

2) Bit Resolution

3) Channels

4) File Size

Sample Rate

The sound signals are analog signals. These signals are sampled and converted into digital signals. Number of samples taken per second decides the frequency of the digital signal and this is known as its sample rate. The sample rate is measured in **Hertz** (Hz) and this value should be at least twice of the frequency of analog sound signal. When the sample rate of the sound file is high then quality of the sound will be

better. To get CD quality sound the sample rate should be **44.1 KHz**. However, a 5 KHz sample rate is acceptable for digitizing speech signals.

Bit Resolution

The number of bits used to record each audio sample is called the bit resolution. High bit resolution will give clear sound without any noise. For example, 8-bit resolution will have some noise compared to 16-bit resolution. It is not advisable to use 8-bit resolution, because it has much more noise and it cannot allow any compression techniques.

Channels

The two types of channels used in audio files are Mono (Single channel) and Stereo (Dual channel). Generally Stereo file has double the amount of file size compared to Monotype file. It is advisable to use Mono files for presentations to reduce file size.

8. File Size

The higher the number of bit resolution, higher the quality of sound, but larger the file size. For example, 16-bit sound file has twice the size of the same file recorded at 8-bit quality.

9. Fancy Transitions

Since each slide is a separate movie clip, fancy and smooth transitions can be created between slides. Using alpha value to make the slide disappear slowly will help to create a smooth transition. Thin lines and small graphics may be more distracting. Use minimum number of words in each slide and move slowly from slide to slide. Flashing slides with many different transitions, dazzling sound effects and gimmicks of various kinds can distract the audience from the argument being made or the evidence being presented.

10. Templates

When designing visuals on the computer, applying a template is a logical starting point. One feature of most desktop presentation packages is the inclusion of a variety of professionally designed templates (Macromedia home page). A template provides a background- including both a design and colour scheme-for use throughout a

presentation. Any or all aspects of a template (colours, fonts, font sizes, etc.) can be changed according to taste or needs. Using a template for presentation creates a theme or sense of unity throughout the presentation. A template includes a background design and colour scheme. The company logo or other identifying information can be incorporated into the template. Since the eyes travel to the bottom right corner as a visual is being changed, this spot may be a good place for the company information advertisement.

3.6 Software Packages

A single presentation package is sufficient for a professional presentation. However, for advanced multimedia presentations additional software may be desirable for Graphics editing (including drawing/illustration), photo manipulation, animation modelling, and video/audio editing. Some of the more popular software packages:

1. **Presentation Software:**
- Business Presentations
- Microsoft PowerPoint
- Software Publishing Harvard Graphics
- Lotus Freelance Graphics

Authoring
- Macromedia Flash MX [1]
- Macromedia Authorware
- MacroMind Director
- Audio Graph [3]
- Gold Disk Astound
- Interactive Solutions MovieWorks
- Ask Me Multimedia Super Show and Tell
- Roger Wagner Publishing HyperStudio
- Media Editing

Photographs
- Adobe Photoshop

- Paint shop pro
- Fractal Design Fractal Painter
- Aldus Photostyler

Illustrations

- Adobe Illustrator
- Macro media Fire works
- Aldus Freehand
- Fractal Design Fractal Painter

3D Animation

- Autodesk 3D Studio
- Maya

Video/Audio

- Adobe Premiere
- Macromedia SoundEdit Pro
- Sound Forge
- Data Translation Media 100
- VideoFusion
- COSA After Effects

4.0 CONCLUSION

Most people these days apply multimedia in presenting their contents to their listeners. If you must use this medium of presentation, then you must use it optimally. You must know the features of a good presentation and apply them in yours.

5.0 SUMMARY

In this unit, we have discussed the various multimedia effects, the different ways of authoring presentations with the different authoring styles, the features of good presentation and software packages. In the next unit you shall learn how to design effective multimedia presentations.

6.0 TUTOR MARKED ASSIGNMENT

1. List the various possible multimedia effects?
2. Explain the features of good presentation
3. Discuss various authoring styles and software packages for multimedia presentation.

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UNIT 2: HOW TO DESIGN EFFECTIVE MULTIMEDIA PRESENTATIONS

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1.0 INTRODUCTION

In the previous unit, we discussed the features of a good multimedia presentation. In this unit, you shall learn the practical step-by step guide for preparing an effective multimedia presentation.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- Demonstrate, using a PowerPoint software how to prepare an effective multimedia presentation.
- Identify the factors to consider in preparing an effective multimedia presentation.

3.0 MAIN CONTENT

3.1 Multimedia Presentations

On a regular basis library need to communicate contents either during user education and staff training or when there is a need to help teachers/ lecturers to prepare their lectures with slides and the students to prepare for their project defence using slides.

Multimedia is a preferred medium of presentation because of its simultaneous engagement of in form of audio and visual components of the content and conveying same to the audience. Such presentations usually lead to high level of retention of information and meaningful engagement with the content. Multimedia allow students and other library users to learn a particular content in a realistic way than learning through a single mode like radio. In the instructional setting, using multimedia improves deep learning as students will be able to give attention to the details of the content. This results in high retention rate and application of what is learn in the classroom to solve societal problems.

3.2 Guides for Preparing an Effective Multimedia

The use of Multimedia in content delivery presents a case of "garbage in, garbage out". Use of technology for the sake of technology does not promote learning. The content for presentation is what matters most before you look for an effective way to communicate the content. The following steps will guide you in creating a successful multimedia presentation.

Step One: Make a plan

You must not focus on technology more than content. The content matters more than exhibition of features of the presentation tool. The process of making a plan involves the following:

Identify a particular content based on the topic: You must have an in-depth knowledge of the content you want to present. This will help you to make a good presentation. However, you are not to present all you know about your topic but only the key points based on your purpose/objective of presentation. It is very important that you prepare an outline of what you want to present. This will help you to:

1) Make adequate clarification concerning the scope of the content
2) Identify and describe the details of the content to be presented
3) Identify the specific concepts that are central to the effective learning of the content, especially within the instructional system.

It is important to note that the scope of the content and selection of the content areas are largely dependent on the instructional objectives. Although the central nature of

the instructional objectives cannot be over-emphasised, it is also imperative to recognise specific limitations concerning the type of learning experience the audience will require. Some of these limitations may sometimes influence the selection of content that will appropriate for the audience. In the classroom setting, it will encourage adequate selection of content that is appropriate to the learning styles and expectations of the students.

Understanding your audience: Selection of multimedia or any form of resources requires the librarian or tutor to understand the nature the audience to use those resources. You must know your audience before designing or selecting resources for them. Understanding your audience will allow you to select appropriate multimedia to satisfy their needs, anytime, anywhere. For instance, the basic characteristics of the audience like gender, age, previous knowledge, expectations, competencies and learning styles should be considered in the selection process. An efficient librarian is the one who analyses the audience before selecting materials for them. This should be an integral function of librarian, especially in this dynamic society. The needs of the society keep changing and it is imperative that these changing expectations are taking into consideration when selecting multimedia for the audience. In the teaching-learning process, the librarian and teacher should ensure that learners characteristics are well analysed to understand their learning needs and expectations. This will enable you to make necessary decisions in relation to teaching goals and selection of presentation techniques. In the words of Craig & Amernic (2006) citing from Feigenson & Dunn, (2003), the presenter or teacher needs to adequately analyse and understand the audience's "perceptual, cognitive, and emotional needs and expectations. The nature of the audience will influence the selection of resources at different levels. For example, some students may prefer to learn with visual content, while some will like video. Understanding these preferences will allow the presenter to select appropriate materials to satisfy the needs and expectations of the audience.

Function as a teacher rather than a mere transmitter of information:

There is a need for you to present the information as a teacher that will consider the specific characteristics of the learners and the instructional objectives to be achieved at the end of the instruction. A mere transmitter of information will not consider all these characteristics while selecting the content. A teacher will transmit information to achieve specific instructional purposes. A teacher will structure the content in such a way that audience will be able to learn the appropriate content.
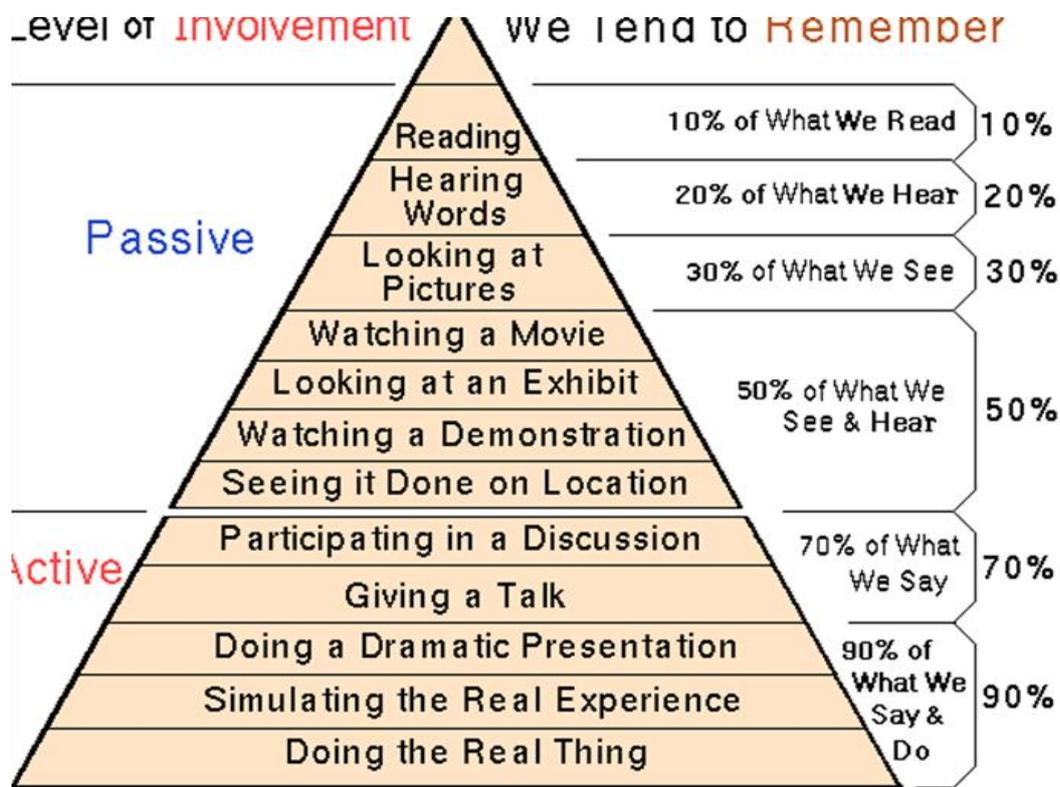

Figure 1: Cone of Edgar Dale

The teacher will also select appropriate resources that will meet the learning needs and expectations of the audience. In the instructional setting, the teacher will consider the characteristics of the students and how the previously stated instructional objectives will be achieved at the end of the instruction. So, as a librarian, you need to function as a teacher that will consider all these characteristics and possibilities while selecting multimedia resources for the students and other library users.

Determine a suitable learning experience: As a presenter, there is a need for you to select appropriate learning experience for the audience. The learning experience

involves the activities and tasks that the audience will execute during the course of presentation. This is an important step as it will assist you to effect a pedagogical change within the process. In the teaching-learning setting, a teacher needs to select adequate learning experience that will engage learners in the content and facilitate the realization of the instructional objectives. Cone of Edgar Dale (Fig. 1) can guide you in making this selection with regard to retention of information presented. Using this cone as a guide, you will see that a learning experience which involves higher engagement of the audience usually leads to a better retention of the information, especially within the instructional setting.

The Bloom's taxonomy (fig 2) incorporates the various pedagogical changes or the expected learning outcomes that a presenter might wish to achieve at the end of presentation or instruction. These learning outcomes include remembering, understanding, applying, analyzing, evaluating and creating. The content and learning experience to be incorporated depend largely on these outcomes. In the instructional setting, this categorization directs the teacher on how to organize the content and structure learning experience in the classroom. The content will be structured in such a way that the instructional objectives are achieved at the end of classroom activities. All other learning activities revolve round the instructional objectives as specified in the taxonomy. Also, for a presenter to provide an accurate learning experience for the audience, it is important to take advantage of the capabilities of appropriate technologies for effective information delivery. In other words, the types of technologies to be employed by the presenter of teacher depend largely on the instructional objectives. Within the classroom setting, the teacher needs to select technological devices and software that will assist in the realization of the instructional objectives. This is well represented in the figure 2.
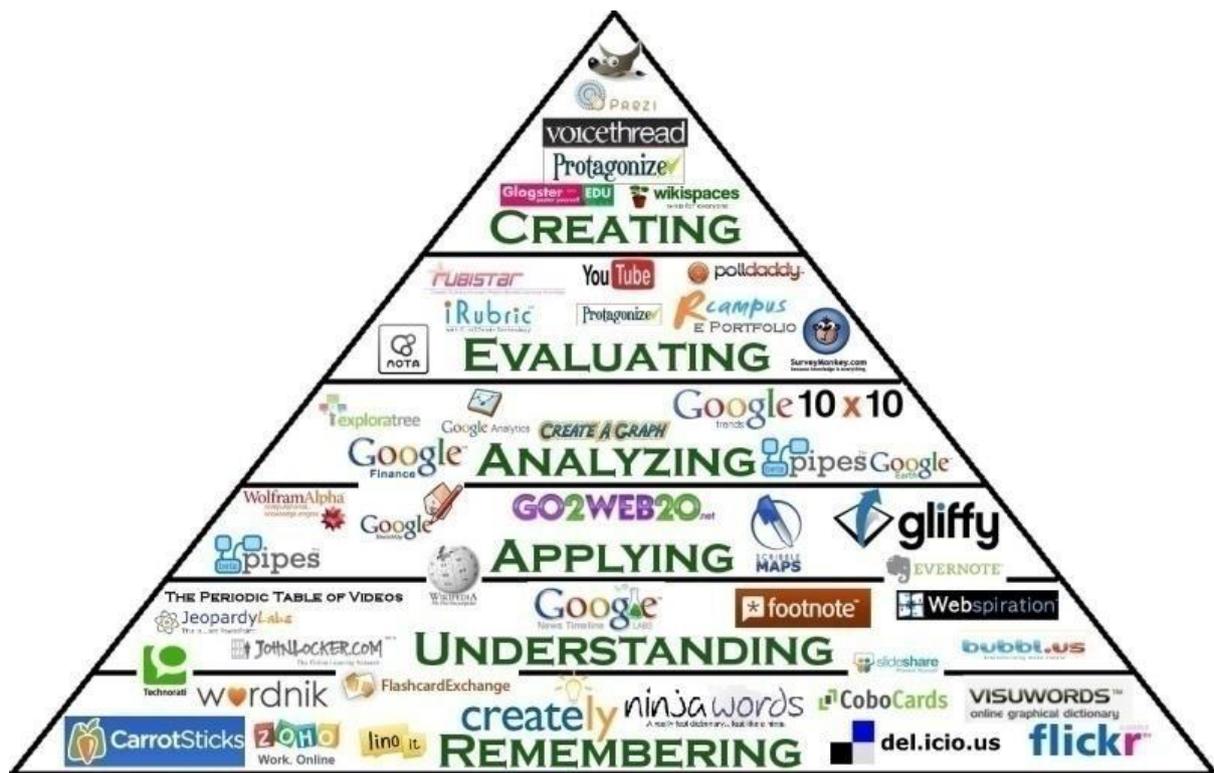
Figure 2: A Technological View of Bloom Taxonomy

Step Two: Make a Scenario

Make a map: Once you have decided on the aspect of the content that you want to impart to the audience (learners), PowerPoint can be used to present the concept maps which will display the connection and structure of the content. Concept mapping is generally a teaching technique which is rooted in the constructivism learning theory. This is usually presented as graphical representation of concepts in the form of nodes and the relationship between concepts in form of tree branches.

Create a logical sequence of presenting concepts: After concept mapping stage, there might be a need to make a logical presentation of the concept such that instructional objectives will be achieved at the end of instruction or presentation. In other words, there is a need to structure the content in a logical sequence that will make learning easy for the audience. This will facilitate the realization of the instructional objectives or learning goals. Therefore, the content should be well

arranged including the required skills and previous knowledge needed for the learning activities.

Organize the Content: At this stage, it is important to organize the content in such a way that the audience will be able to meaningfully and easily learn the content or receive the information. In doing this, you need to consider the basic characteristics of your audience including their age, gender, expectations, learning styles and preferences. You can organize the content in a table to show the topics and the learning materials to be used, while taking note of the characteristics of the audience. This is quite important for presentation and instructional purposes.

Step Three: Select the Techniques

This step involves the selection of appropriate techniques to facilitate information delivery to the audience. This practically involves the utilization of appropriate audio-visual resources that will engage the audience and enhance the realization of instructional objectives at different levels of education. Some of the phases under this step are highlighted below:

Make decision about the characteristics of the multimedia*: The multimedia resources comprise various audio-visual elements like colours, designs, voiceover, infographics and animation. A successful presenter or teacher needs to select appropriate combination of these elements in the information delivery. This selection is usually based on the nature of the content and the instructional objectives previously stated by the presenter or teacher. A content may require the power of audio component only to deliver information to the audience. On the other hand, some science-related content may require instructional video and animation to make learning realistic and connected to real-life situation. This is important as the presenter needs to consider the capabilities of these multimedia resources and select the most appropriate elements that will adequately convey the information. The presenter is expected to consider this in the selection process.

Keep a coordinated style*: It is expected that you make slides and select multimedia elements in line with the presentation and the nature of the content. In the words of Walbert, style form of writing and the visual appearance of the slides. This involves

the design, layout, fonts, images and voiceover used in the presentation. In selecting all these items, the presenter is expected to consider the characteristics of the audience and the nature of the content.

Make your slides interesting: It is important to note that as a presenter, you should ensure that your presentation should be engaging and interesting to the audience. This could be made possible with the use of multimedia resources like images, animation, sound and videos. It is unacceptable to use only text for your presentation.

Step Four: Practice Stage for the Presentation

At this stage, it is important that you plan for your presentation to be interesting and engaging. At the delivery stage, you need to ensure that planning is given utmost priority to seamlessly present the content in such a way that the required information will be conveyed to the audience. A rehearsal might be needed to identify the instructional or information gaps. You might need to clear some misconceptions during this stage. Generally, you might need to consider the following factors at this practicing stage:

Give your presentation an interesting start: It is important that you think about how to engage your audience in the content. Doing this requires that you make your presentation quite interesting. You can make your presentation interesting by starting with a captivating question or scenario that will bring your audience to the classroom to get familiar with the content. Ensure that you get the attention of your audience before starting the presentation or classroom instruction. Starting with a captivating question or scenario will stimulate the interest of the audience and will easy the mode of delivery as well.

Present the content instead of reading from the PPT slides: One of the most important attributes of an efficient presenter is the ability to discuss the content rather than reading from the slides. You should understand that your audience can read from the slides, so, you need to discuss the content. Reading out from the slides makes your audience quite bored and your presentation becomes uninteresting.

Keep eye contact with individual: Presentation is a skill and not every presenter may be comfortable when presenting in front of a large audience. Regardless of the

multimedia elements embedded in your presentation, you need to maintain eye contact with the audience occasionally. This allows you to create a presence and maintain the attention of the audience.

Consider the environment: You need to consider the environmental condition of the presentation setting. This implies that you need to consider the supporting facilities and infrastructures that will help in the delivery of information or instruction. Factors like room lighting, number of participants, room size, direction of light in the room, and other critical resources and settings should be considered and well catered for.

End the presentation impressively: On the last note, ensure that you systematically end your presentation. Bring the presentation to a logical end rather than abruptly ending your presentation.

4.0 CONCLUSION

Power point presentation is one of the ways you can use to convey your contents in multimedia format. All librarians must learn how to prepare PowerPoint (slides), be able to use them and assist others to prepare them.

5.0 SUMMARY

In this unit, you have learnt the various steps in preparing an effective multimedia such as: (1) Make a plan (2) make a scenario (3) Select the techniques and (4) Practice the presentation

6.0 TUTOR MARKED ASSIGNMENT

1. List the various steps you need to take in preparing an effective multimedia presentation.

2. How do you determine a suitable learning experience?

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