

Multimedia Technology Application to Information Service Delivery in a University Library System: The Case of Ahmadu Bello University, Zaria Library Complex

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Abstract

This study was carried out to investigate Multimedia Technology Application to Information Service Delivery in the Ahmadu Bello university library Complex. Three research objectives were formulated with respect to the types of multimedia technology application available and used and types of information services provided using multimedia technology available. A total of forty two (42) librarians from twelve (12) libraries that constituted the Ahmadu Bello university library complex were used as subjects of the study. The data collected were presented and analyzed using frequency distribution tables and percentages. The research discovered that there were different types of multimedia technologies applied for information services in the university library complex. These include text, audio, video, and animations along with their streaming mode of presentation either live or stored audio and video; and that the application of multimedia technologies available in the university library complex has significant effect on information service delivery. The findings indicated that among the libraries studied only Kashim Ibrahim applied live interactive audio and live interactive video for information service delivery. The research recommends that a periodic in-house training for all library staff on the application of multimedia technologies be the starting point for their deployment. It also recommends acquisition of up-to-date hardware and software that are necessary for effective application of multimedia technologies to information service delivery.

Introduction

Multimedia has become a commonly used tool for presenting contents to users. The employment of this technology is no longer limited to entertainment industry but span other areas as well. Multimedia resources' use in higher education programs has thus grown tremendously in recent years. Lectures are recorded in audio and video for storage and distribution to students. Ho (2007) noted that free online multimedia hosting services are popularly cherished such as YouTube and Yahoo video. Diezmann & Walters (2002) citing Mayers (1997) observed that the fundamental educational advantage of multimedia learning using, for example CD-ROMS, videos and websites, is that these resources provide integrated visually and linguistically rich sensory input that enhance the users' learning experiences. Additionally, CD-ROMs or websites improve access to content materials, are cost effective to reproduce, and can be updated easily. However, there are scant appropriate resources available in some areas of higher education. Thus, staff wishing to capitalize on the educational benefits of technologically based resources may need to develop their own resource materials. In order to optimize the success of a multimedia resource, the development process should be informed by the principles of effective educational content management.

Purpose of the Study

The purpose of this research include

- 1 To find out if Ahmadu Bello University Library Complex apply multimedia technology for information service.
- 2 To find out the type of multimedia technologies applied to information service in Ahmadu Bello University Library Complex
- 3 To ascertain the types of information services provided using multimedia technologies in Ahmadu Bello university library complex.

Research Questions

The following research questions guided the study

1. Do Ahmadu Bello University Library Complex apply multimedia technology for information service?
2. What type of multimedia technologies are applied to information service in Ahmadu Bello University Library Complex?
3. What types of information services provided using multimedia technologies in Ahmadu Bello university library complex?

Literature Review

The term *multimedia* conjures up a variety of meanings. You might think of sitting in a room where images are presented on one or more screens and music or other sounds are presented using speakers – that is, multimedia as a “live” performance. Alternatively, you might think of sitting in front of a computer screen that presents graphics on the screen along with spoken words from the computer's speakers – that is, multimedia as an online lesson. Other possibilities include watching a video on a television screen while listening to the corresponding words, music, and sounds, or watching a PowerPoint. Multimedia applications are defined as those that incorporate any combination of text, audio, animation and video content in a digital form. Digital form as used here refers to encoding according to some standard of the information in a binary format which is interpreted by some runtime software. Multimedia delivers interactivity where the user of the content can be presented with choices regarding the sequence of events. When a multimedia program is developed in a hypertext environment, the resulting product is called hypermedia. So multimedia would then be a part of the hypermedia. All hypermedia products are multimedia products but not vice versa. The basic difference between hypermedia and multimedia is in the organization and linkages of the information fragments. The information chunks or fragments in multimedia are organized linearly whereas in hypermedia, these are organized non-linearly with links to each other. A multimedia system records, processes, stores and delivers all types of information in binary code the same way as a computer does. This is quite different from the traditional analogue technology.

Applications of Multimedia in Libraries

Multimedia systems are being used for many purposes by different people in different organizations and office environment. In libraries and information Centers, the main functions include media integration, storing, organization and dissemination of information at different locations in different ways. This paper attempted to examine the application of multimedia for library and information services in Ahmadu Bello University library complex. Some of the general applications of multimedia are given as: Instruction; Training; Technical presentations; Multimedia communications such as multimedia e-mail, personal conferencing, video conferencing; Multimedia Newsletters; Reference tools, e.g. encyclopedia; Exhibitions; Engineering drawings, specifications, etc.

In examining the applications of multimedia, Ahmed (2011) posited that nowadays multimedia technologies are defined as a mixed technological progression. This implied that it goes beyond a simple combination of hardware and software, but is an integrated extended architecture of program-person perception of the information and knowledge. Ahmed further opined that the beginning of compact disc (Read on Only memory). CD-ROMs have made the whole epoch in the activity of libraries connected with digitization of the documentary information and its distribution for the purposes of replacement of lacunas in funds, their replacement by new receipts instead of more expensive inaccessible print editions. Presently CDs are the whole family of data storages. They allow not only read the information with high speed, but also copy and process the information presented in any kind (audio, video, text, photo). New generation of compact disks is DVD {Digital Versatile Disk}. Since 1995 international standards exist which support maintenance of creation and use of DVD in multiple formats.

Information Service Delivery in University Libraries

Information is organized to meet specific requirements using conventional or technically oriented information systems. It is line with this that Woodsworth and Williams II (1993) defined an information service as a set of activities that provide individuals with relatively easy access to data or information. Information services thus refer to activities carried out to satisfy the intended needs of customers. Quality

service package delivery is a formidable task for all institutions (Gupta, 2003). Madhusudhan and Namabhushanam (2012) studied how digital information provisions have boosted a fundamental change in library and information services.

One way to understand information services is to analyze their common ingredients which include information professionals, information resources, and delivery systems. Information services are thus considered to be a requisite for the proper orientation and guidance of every society. The level of sophistication of any society and the nature of its development are largely determined by the availability of information channels. These are what must be employed for effective transfer and diffusion of information and knowledge which is to be rapidly utilized for differing needs and purposes (Suleiman, 2006). Technically, library services are to promote knowledge and application of scientific information in direct support of an activity towards fulfilling the mission of an organization/institution (Aina, 2008 and Ladu2010). On the application of multimedia in university libraries Abubakar (2012) proffered that digital facilities demand machine searching as they offer relatively mature set of tools of information service delivery in learning and research.

How Multimedia is applied to Information Service

To maintain the library's position as a valued source of information, librarians must evolve to meet rapidly changing user expectations and stay in touch by blending traditional skill with new and different ones. Shank and Bell (2009) observed that to meet these challenges there is need for introduction of the concept of "blended librarianship," a term that describe the combination of librarianship, information technology, and instructional design and technology skills. The involvement is regarded as important technique for enhancing information literacy initiative library customers. Library Media Services on the other hand, supports access to and creation of audio/visual media as data and information. In the world of knowledge, media helps define our collective desire to experience subjects across the disciplines, especially those where seeing and hearing are the primary elements of understanding.

Virtual reference is reference service initiated electronically, often in real-time, where library customers employ computers or other Internet technology to communicate with reference staff, without being physically present. Communication channels used frequently in virtual reference include chat, videoconferencing, Voice over IP, co-browsing, e-mail, and instant messaging (Pace, 2004). Current awareness can be seen as a way to receive automatic alerts about new articles in your specific research area. It is defined as technology that helps you to organize and mediate the information that you need to conduct your research (IFLA, 2010). Current Awareness Services has been important means for keeping the customers up to date in their areas of interest. A current awareness service may be as simple as copy of table of contents or a bulletin containing bibliographic records of articles selected from the current issues of journals and other material, and usually organized by subjects. Links to multimedia formats of the publication are provided in mail messages (Chauhan, 2004).

Multimedia delivery comes in two methods: downloading and streaming. Streaming requires more complex structure, but rewards with better user experience. Although streaming is the method of choice today, downloading is still useful in ad-hoc situation where streaming is not feasible (Ho, 2007). Some services aim to provide streaming-like capability through mobile devices while, some others may prefer to use personal computers (PC). Streaming sometimes is the only way to deliver media contents to user. This work targets to serve the educational purpose in learning about multimedia streaming on any platform including PCs and also through cable networks. These learning techniques are facilitated by the provision of digital learning materials (DLM). Shank and Bell (2009) defined digital learning materials as web based digital resources that can be utilized for instructional purposes and are part of next generation of digital information formats required to augment the instructional process and improve student learning. The informational elements that make up digital learning materials can include text, graphics, animations, audio, and video. Digital Learning Materials can take various forms such as tutorials simulations, exercises, online modules, games and experiments. What sets them apart from more traditional formats such as monographs, periodicals, and conventional media (T.V, film, photos and overhead projectors) is that DLM include both active learning and assessment components that promote student learning. The resources allow students to more effectively match their ideal learning style through interaction with content in various modes because they often incorporate audio and visual concepts, which in some cases might be the primary way the students can succeed. The main advantage of a digital format is the

flexibility in combining, transmitting, manipulating and customizing the elements of the multimedia according to the needs of the user.

Relevance of Multimedia Resources

The primary purpose of educational multimedia resources is to enhance learning. Hence, the design of these resources needs to support contemporary approaches to learning and teaching where learners are viewed as active constructors of knowledge and teachers are facilitators of that learning process (Fenstermacher, 1986). Such a view is antithetical to the conception of learners as passive recipients of knowledge that is dispensed by the teacher (Fletcher & Lowe, 1993) an assumption in many educational multimedia materials. The educator's task is to provide students with opportunities to construct knowledge through meaningful, cognitively engaging tasks (Glaserfeld, 1995; Wilson, 1996). Constructivist perspectives acknowledge that the learner builds understanding by evaluating new experiences in the light of prior knowledge. This aptly justifies the interactivity of multimedia when termed as the "rich media"

Justification of Study

The findings of this research would be of great importance to university libraries in the following ways:

- It will assist the university library management to provide adequate multimedia facilities in their respective libraries.
- It will encourage staff and customers to use multimedia applications in such a way as to stimulate their interests.
- It will bridge the information provision gap between those of multimodal type and otherwise.
- It will increase the quality of university education generally.

Methodology

The research method was a descriptive survey designed to find out the availability of multimedia technologies in the Ahmadu Bello university library complex. The survey was also designed to find out the level of use of the multimedia technologies as well the types of information services rendered using multimedia technologies. The research instrument used was questionnaires which were administered to forty two (42) staff of the university library complex drawn from the departments and units where multimedia based services were said to be carried out.

Analysis of Results

Table1. Types of Multimedia Technologies Available for information Services in Ahmadu Bello University Library Complex

Multimedia technology Types Available	libraries											
	KIL	PKL	LL	CILS	IAR	NAPRI	NAERLS	ML	VL	AHL	DAC	SPL
Streaming stored Audio		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Streaming stored video	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Streaming live audio	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Streaming live video	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Live interactive audio	✓		-	-	-	-	-	-	-	-	-	-
Live interactive video	✓	-	-	-	-	-	-	-	-	-	-	-

Key KIL =Kashim Ibrahim Library; PKL= President Kennedy Library; LL= Law Library; IAR= Institute for Agricultural Research Library; NAPRI= National Animal Production Research Institute Library; ML= Medical Library; VL=Veterinary Library; AHL Arewa House Library; Division of Agricultural Colleges Library ; NAERLS= National Agricultural Extension Research and Liaison Services Library
[√]= Available; [-] Not Available

Table I above indicated that streaming stored audio and video as well as streaming live audio and video were available in the Ahmadu Bello University library complex. However none of the satellite libraries except Kashim Ibrahim Library (the main library) had streaming interactive audio and video. It is important to say that the use of multimedia technology has great significance in colleges, universities and research institutions in the Western countries. In these countries, the technology is being seen as a key player to development in all ramifications and essential component of education. Furthermore the presence of multimedia technology in the selected libraries made these researchers to find out their level of use.

Table2. Types of Multimedia Technologies Used for information Services in Ahmadu Bello University Library Complex

Multimedia technology Types Used	Libraries											
	KIL	PKL	LL	CILS	IAR	NAPRI	NAERLS	ML	VL	AHL	DA C	SPL
Streaming stored Audio	.	√	√	√	√	√	√	√	√	√	√	-
Streaming stored video	√	√	√	√	√	√	√	√	√	√	√	-
Streaming live audio	√	√	√	√	√	√	√	√	√	√	√	-
Streaming live video	√	√	√	√	√	√	√	√	√	√	√	-
Live interactive audio	√		-	-	-	-	-	-	-	-	-	-
Live interactive video	√	-	-	-	-	-	-	-	-	-	-	-

Key KIL =Kashim Ibrahim Library; PKL= President Kennedy Library; LL= Law Library; IAR= Institute for Agricultural Research Library; NAPRI= National Animal Production Research Institute Library; ML= Medical Library; VL=Veterinary Library; AHL Arewa House Library; Division of Agricultural Colleges Library; NAERLS= National Agriculture Extension Research and Liaison Services Library
[√]= Available; [-] Not Available

Table 2 above indicated that all the libraries studied made use of the multimedia technologies that were said to be available in their libraries. Samaru Public library (SPL), however, does not make use of any multimedia technologies in its library despite the indication of their availability. Further investigation by the researchers indicated that hardware malfunctioning constituted some of the infrastructural deficiencies that prevented them from the use of these technologies. This observation Contradicts IFLA's view that irrespective of the type of library, all information Services need to be provided using multimedia technologies, (IFLA 2004).

Table 3. Types of Information Services Provided Using Multimedia Technologies

Information Services provided Using Multimedia technologies	Libraries											
	KIL	PKL	LL	CILS	IAR	NAPRI	NAERLS	ML	VL	AHL	DAC	SP
Information Literacy Services	8(19)	3(7.1)	1(2.4)	2(4.8)	2(4.8)	2(4.8)	2(4.8)	1(1.4)	1(1.4)	2(4.8)	2(4.8)	-
Reference Services	3(7.1)	-	-	-	-	-	-	-	-	-	-	-
Media Services	6(14.3)	-	-	-	-	-	-	-	-	-	-	-
Current Awareness Services	5(11.9)	-	-	-	-	-	-	-	-	-	-	-
Total	22(52.4)	3(7.1)	1(2.4)	2(4.8)	2(4.8)	2(4.8)	2(4.8)	2(2.8)	2(2.8)	2(2.8)	2(2.8)	-

In table 3 above it is indicated that all the libraries studied, with the exception of Samaru Public Library offered information literacy services. It will however be observed that only Kashim Ibrahim Library, being the main university library, offered Reference services, Media services and Customer services using multimedia technologies. The percentages are in the order 3(7.1%), 6(14.3%) and 5(11.9%) respectively. The finding here agrees with Terwel, Kuiper and Volman, (2005) who reported that most of the libraries use multimedia resources for instructional purpose as well as in training using tutorial packages. For instance, multimedia tutorials are available on how to do online searching, how to use Boolean operators, how to decipher bibliographic citations as well as guide for performing a virtual tour for electronic library.

Conclusion

From the foregoing, it was evident that university libraries have for a long time now made use of analogue multimedia technologies in the form of audio-visual materials as media services which were concentrated in the media area of the library. The past years have seen how an explosion in the use of digital media-Industry is making significant investments to deliver digital audio, image and video information to consumers and customers. A new infrastructure of digital audio, image and video recorders and players, on-line services, is rapidly being deployed. At the same time major corporations are converting their audio, image and video archives to an electronic form. Digital media offer several distinct advantages over analog media: the quality of digital audio, image and video signals is higher than that of their analog counterparts. Editing is easy because one can access the exact discrete locations that should be changed. Copying is simple with no loss of fidelity. A copy of digital media is identical to the original. Digital audio, image and videos are easily transmitted over networked information systems. These advantages have opened up many new possibilities in university libraries. The challenge of multimedia communications is to provide services that integrate text, sound, image and video information and to do it in a way that preserves the ease of use and interactivity so that university libraries in Nigeria can fully key in to these possibilities.

Summary of Major Findings

The major findings of the study were:

- 1 It was found that multimedia technologies were available in all the libraries Studied.
- 2 It was found that all the libraries studied had streaming stored audio, streaming stored video but none had live interactive video and audio except the Kashim Ibrahim Library, the main university library.
- 3 All the university libraries studied used streaming stored audio, streaming stored video except the Samaru Public Library. It was however observed that only Kashim Ibrahim Library used live interactive video and audio for information service delivery
- 4 Information literacy services were provided using multimedia technologies in all the libraries with the exception of the Samaru Public Library.

Recommendations

Based on the findings of the study, the research recommends as follows:

- 1 There is urgent need to provide technological support in the area multimedia storage in university libraries
- 2 Search strategies for multimedia content should be enhanced for effective and efficient information service delivery in the university libraries.
- 3 Software for integration of multimedia content should be made available to university libraries
- 4 Multimedia applications should be provided in adequate number to enable easy and access to quality information in university libraries..
- 5 Regular and effective maintenance of hardware and software to keep them up-to-date is necessary for effective application of multimedia technologies.

Suggestions for Further Studies

This study focused on application of multimedia technology in University libraries in the Ahmadu Bello University Library Ccomplex.. The study could be replicated in other part of the federation towards establishing a common front for providing solution to the problem.

References

- Ahmed,A.S. (2011). Multimedia Technologies in University Libraries: Opportunities and Tasks. *European Journal of Scientific Research*. 59(2), pp216-218
- Aina, A.J & Adekanye E.A (2013) Audio-visual Resources Availability and Use For Library Services Among Colleges of Education in Lagos State Nigeria *International Journal of Library and Information Science* 5(10).
- Chauhan, V(2004). Information Technology and Services .Retrieved on 12/3/2013 from <http://vikaschauhan.brandyourself.com/>
- Diezmann, C.M & Walters, J.J.(2002) A theoretical framework for multimedia resources: A case from science education. Paper presented at the Australian Association for Research in Education (AARE) Conference 2nd-5th Brisbane
- Fenstermacher, G. D. (1986). Philosophy of research on teaching: Three aspects. In M. C. Wittrock (Ed.), *Handbook of Research on Teaching* (pp. 37-49). New York: Macmillan.
- Fletcher, N., & Lowe, I. (1993). Science education: Contested Territory. *EQ Australia*, 1, 18-
- Glaserfeld, E. V. (1995). *Radical constructivism: a way of knowing and learning*. Washington, DC: Falmer Press.
- Gupta, S. (1996).Impact of information technology on library management techniques and staffing structure. In: *Human Relations in Librarianship*. Seminar Papers of XLI All India Conference held on January 7-10, 1996 in Vijayawada, 1996, pp. 336-343.

- Ho, Bao, "Mobile Multimedia Streaming Library" (2007). *Master's Projects*. Paper 34. Accessed and Retrieved from http://scholarworks.sjsu.edu/etd_projects Paper 34 on 11/26/2014
- IFLA, (2004). *Libraries: Tools For Education and Development*. Retrieved from <http://archives.ifla.org/iv/ifla70/> on 16/4/2014
- Madhusudhan, M and Namabhushanam, V.(2012). Use of Web-based Library and Information Services in India: A Study. *International Journal of Library and Information Studies*.20(4).
- Mayer R. (1997) *The Cambridge Handbook of Multimedia Learning* Edited by Richard E. Mayer Cambridge University Press
- Oshinaike A.R. and Adekunmisi S.R.(2011) Use of Multimedia for Teaching in Nigerian University System: A Case Study of University of Ibadan. *Library Philosophy and Practice*.
- Pace, A. (2003). Virtual Reference: What's in a Name?. *Computers in Libraries* 23 (4): 55-56.