

## Enhancing Library and Information Management through Multimedia and Hypermedia Instructions

BY

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### Abstract

The study focused on Enhancing Library Service Management through application of multimedia and hypermedia to drive library functions of information dissemination – (diverse recorded knowledge) to users – (learners, teachers, lecturers and researchers). The ongoing digital age – era of information communication technology (ICT) which permeates fast into the quantity and quality, the range, speed of information generation, repackaging, preservation, transfer and dissemination in our lives today and world of works should be taken full advantage. This 21<sup>st</sup> century library services should adopt multimedia and hypermedia to drive its services/functions to keep abreast of the moving trend with ICT impact. Studying shows that multimedia, hypermedia, their associated equipment and technological expertise if adopted can greatly enhance library information functions by assisting the dissemination of the printed word. Multimedia resources form part of our cultural heritage. Research has confirmed that hypermedia convey huge quantum of information that could be preserved for future use. Realistically study again indicates that rich varieties of media expression in our society could be accessed, stored, and made available to library patrons. This could greatly enhanced learning and education. Study in addition shows that multimedia and electronic resources have high potential to improve learning and knowledge requisition in all ramifications. The role of multimedia and hypermedia facilitated teaching and learning is one of the widely current discussed issues in contemporary education. Conclusively, libraries of all types – (the National Public, Academic, Research, Special and School) in this 21<sup>st</sup> century should embrace multimedia and hypermedia tools to boast their information management services effectively. Multimedia combines text, data, images, animation, photograph, audio, video, which are converted into information digital media to create a platform that allows learners to manipulate, explore, and interact at their own pace and time of learning.

**Keywords:** Library, Information Management, Multimedia, Hypermedia

### Introduction

The digital age is transforming the quantity, range, and speed of information and communication in our lives. In the 21<sup>st</sup> century, libraries have ensured that they have a place in this moving trend as library services have improved greatly as a result of the absorption of information and communication technological tools. As information providers, Librarians should be concerned with the provision of information in the formats most suited to the differing needs of various types of user, each of which must be clearly differentiated. A library exists to serve its community and consequently the needs of all members of that community must be accommodated, the old and the young, the able and the disabled, the gifted and the backward members of the society. In developing countries, the provision of multimedia and hypermedia resources and their associated equipment are regarded as of greater importance than the printed word because the level of literacy is such that oral and visual expressions are essential for the purposes of communication.

The need for still images, films and sound on the more traditional non-electronic audiovisual carriers still exists alongside the growing possibilities of the internet. Multimedia and computer based information have contributed to a great explosion of audiovisual materials in libraries. Almost every library user or even visitor is a potential user of audiovisual and multimedia materials. Libraries are in a hybrid situation as they have to deal with all sorts of material, including print, audiovisual, electronic (including internet) and multimedia. Librarians should be aware of the potential of audiovisual and multimedia formats as resource materials and include them in their collections. However, libraries contain textbooks, journals, indexes, abstracts, newspapers and magazines, reports, CD-ROM databases, internet/E-mail, video tapes/cassettes, diskettes magnetic disk, computers, micro forms etc. These items are not only for the education, enjoyment, and entertainment of library users but also serve as a fountain for researchers to do

independent work, use computers, audio-visual resources; to host special events and book clubs; research, teaching and for learning. The importance of audio-visual resources in the educational process and in a library environment is quite evident (Iyamu and Aduwa, 2004).

Swank (2011) defines a library as an institution that manages the intellectual products that learners can gain access to readily. Popoola and Haliso (2009) define library information resources as those information bearing materials. That is in both printed and electronic formats, such as textbooks, journals, indexes, abstracts, newspapers and magazines, reports, CD-ROM databases, internet/E-mail, video tapes/cassettes, diskettes magnetic disk, computers, micro forms etc. These information materials are the raw data that libraries acquire, catalogue, stock, and make available to their patrons, as well as use to provide various other services. Multimedia resources/materials are part of our cultural heritage carrying a huge amount of information that needs to be preserved for future use. The rich variety of media expressions in the society should be reflected in the services offered to users by libraries. Non-printed materials are however, often referred to as multimedia resources. They are the products of advanced technology, some of which require special equipment to operate. We also have electronic resources as part of the library collection development and preservation.

The 21st century audio-visual centers can and should be the hubs for increasing students' achievement. The Resource Center is a library of audio-visual resources for all ages that cover many of the concepts of the organizational institution. It is operated by the professional librarians, resource center manager and para-professionals. Multimedia collection contains both online resources and multimedia items to borrow and use. The library also provides facilities for students to watch video and DVDs, listen to sound recording and view microfiches and microfilms.

### **The Concept of Library and Information Management**

A library is an institution or agency/organization that supports education learning and research in all ramifications for its clients. The library is made up of a collection of information materials (books, journals, online materials), a place to house the collection (building, room or the Internet), services, (reference, circulation, cataloguing, etc.), and staff to collect, organize and provide access to the collection. There are several types of libraries; each has its own set of clients with varying reasons for exploring the library for knowledge. Despite these differences, however, all libraries have a common mission, that is, to provide equal access to information to the community that it serves. For the library to achieve this objective, certain information communication technology (ICT) equipment must be made available to facilitate ease of access to information most especially information in non-print format owing to the prevailing global trend in the information world. All libraries must therefore look into the future to be proactive to develop long-term strategies to meet increasing user needs. With technological developments now affecting the information industry, libraries must plan to be ready for change in the coming decade. No one strategy is best for all libraries. Each one must examine its own environment and resources. Each must note its own strengths, weaknesses, opportunities and threats, as well as its own mission, vision and goals of the present body.

Library management involves functions such as planning, organizing, leading, and controlling. Planning is about the library systematically making decisions about the library goals. Organizing the resources, assembling and coordinating human, financial, physical, informational, and other resources needed to achieve the ultimate library goals. Leading is about functions that involve efforts on the part of the librarian to stimulate high productivity and performance by employees, and

controlling, and monitoring various library operations and services. These four management functions are highly integrated, but libraries that excel in organizing material resources and in leading their human capital are known to provide better performance. The organization of information/knowledge is an essential preliminary to its effective exploitation and dissemination. As the quantity of knowledge expands, the need to organize it becomes more pressing. A vast number of different means of organizing information have been devised and exploited since the earliest times. With the vast output of new information and ever-increasing degree of specialization in all areas of human knowledge, heavy demands are being placed on library information storage and retrieval systems which can be scarcely met by the traditional methods except with the use of IT (information technology) devices. The improvements and changes in computing and telecommunications and the integration of the two fields have had a huge

role to play in the methods of information processing and dissemination in libraries; thus improving the quality of such libraries.

It is of no doubt that IT plays a significant role in education generally and library operations in particular as attested to by Nwizu (2008). The use of multimedia and electronic resources has broken the barriers of time, distance, and local, which impeded the growth of formal education, just as Adeyemi (2004) emphasizes that students use these resources to complete major academic assignments. Multimedia and electronic resources have the potential for enhancing student learning. The role of these resources in teaching and learning is one of the most important and widely discussed issues in contemporary education policy of today. Libraries, ICT's has tremendously changed the management of resources or house-keeping operations as well as the way services are delivered. While general IT application tools and Integrated Library Management Systems are largely used in housekeeping operations, like acquisition, cataloguing, circulation control, serials control etc; Internet has been used extensively as a resource as well as a tool to deliver the Library and Information Services.

#### **Overview of Multimedia and Hypermedia Instructions**

Libraries are embracing emerging technologies for document management. These technologies include multimedia objects. It requires new methods of all aspects of multimedia data management. Starting from the source through storage to delivery libraries have to use modern network and servers technologies in order to supply or deliver services of a high quality of which the introduction of multimedia and hypermedia resources is an important part.

#### **What is Multimedia/Hypermedia?**

Multimedia is the combination of some or all forms such as text, data, images, animations, photographs, audio, video which are converted from different formats into a uni-format digital media and is delivered by computers. Unlike the analogue media (*TV programmes*), the digital media which allows users to manipulate according to the needs, use at their pace, and interact at any point of the program. 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 organisation and linkages of the information fragments. The information chunks/fragments in multimedia are organized linearly whereas in hypermedia, these are organized non-linearly with links to each other.

The main elements of the multimedia are:

- (a) Text: information about an object/ event, etc; notes, captions, subtitles, contents, indexes, dictionaries, and help facilities.
- (b) Data: tables, charts, graphs, spreadsheets, statistics, and raw data.
- (c) Graphics: both traditional and computer, generated (vector form) such as drawings, prints, maps, etc.
- (d) Photographic images: (raster form): negatives, slides, prints (both from digital still & video cameras and scanned photographs).
- (e) Animation: including both computer generated, video, etc.
- (f) Audio: including speech and music digitized from cassettes, tapes, CDs, etc.
- (g) Video (digital): either converted from analogue film or entirely created within a computer.

#### **The Place of Multimedia and Hypermedia Instructions towards Enhancing Library and Information Management Services**

In this technologically driven world, the use of digital contents for creating, storing, managing and sharing information has become a norm among librarians and library users. It is witnessing a transformation which allows both parties to share their experiences in a more natural and compelling form using the key elements of multimedia (pictures, audios, videos, and word processed text) in an interactive manner. Drawing from this platform, it is possible and pleasant to make learning occur through interaction with rich learning environments using online or standalone interactive multimedia and hypermedia thus making a significant progress in information management. Hypermedia is an emerging technology, which uses information and knowledge management techniques appropriate for the integration of hypertext with images, video, sounds, animation and simulations for teaching and learning purposes in the library.

Sharma and Hannafin (2007) considered it as an application that shows direction and relationships among concepts and information already integrated with multiple media elements. The application is mainly for the purpose of facilitating easy access to, and manipulation of the information encapsulated in the data bank. In addition, hypermedia systems offer the user a direct access to all information units represented in the hypertext base by means of two information retrieval modes, browsing and searching for both stand alone and World Wide Web (WWW). In line with this, Berlanga and Gracia (2005) remarked that hypermedia is particularly appropriate for library users who are already familiar with searching information in the library and reading books and encyclopaedias thus facilitating easy access and retrieval of information using their previous experience and background knowledge. Similarly, library clientele who are familiar with internet browsing would find links and cross-references leading to the bulk of information for careful systematic search within an encompassing, up to date online networked library environment.

The potential benefits of multimedia instruction are numerous. Thus, claims ranging from reduced learning time to cost effectiveness abound. One major benefit of multimedia instruction in the library environment according to Atienza and Tai (2009) is the degree of information control by the library user. Indeed, learner-controlled instruction allows library clientele to study material at their pace and put them under less pressure to perform within certain time limits. In the same way, Chang and Yang (2010) affirmed that learners can choose a logical route through the instructional material moving between text, images and sound, pausing for a time to interpret, analyse, and explore. As such, interactive multimedia adapts well to individual differences due to its variety of learning styles and high degree of learner control. Furthermore, the importance of interactivity in the context of multimedia-based instruction, suggest that interactivity makes it easy for library users to re-visit or explore specific parts of the instructional contents to test ideas, and to receive feedback. In these and many similar claims, Evans and Gibbons (2007) noted that interactivity is presented as an attribute of learning environments that enhances the quality of information management in the library and also in an educational setting.

In addition, Mayer (2005) emphasised that studying from material made with more than one medium is usually more effective than material comprised of only one medium. This is partly due to the fact that different parts of the brain process different information. For example, Mayer (2009) observed that some parts of the brain process text while other parts process visual information. Likewise, when multimedia elements (text, pictures, video, graphics, and animations) activate more regions of the brain, there is an increase in information management resulting in learning and retention compared to materials that require fewer parts of the brain to process information. Adegoke (2011), remarked that multimedia facilities can provide an enhanced or augmented learning experience at a low cost per unit, making the process of learning more purposeful, participatory, and flexible in time and space, and modified toward individual learning styles that unleashes a long-term gain to all. Deimann and Keller (2006) added that information in form of word definitions and spoken pronunciations for new vocabulary along with pictures, animated graphics, or video clips that illustrate processes or concepts being introduced or reviewed can be delivered through the hypermedia format providing library users with new experiences related to the topic being studied.

Interestingly, experts in educational technology have advocated the use of hypermedia instruction in educational settings to include: non-linear access to vast amounts of information; in-depth exploration of information on demand (Robberecht, 2007); interaction with the instructional material in a self-paced manner with attention-capturing or engaging capabilities (Dunser and Jirasko, 2005). The high value and potential of hypermedia as an educational technology tool cannot be obtained without paying attention to the hypermedia development tools.

### Conclusion

The concepts of interactive multimedia and hypermedia have been elaborated and the discussion portrayed that multimedia and hypermedia instructions have the potential to improve information management in a library and educational setting, improve the general quality of instructional delivery and improve collaboration between researchers, developers and library end users.

The major attribute of interactive multimedia and hypermedia as noted by Sharma, Oliver and Hannafin (2007) is the degree of learner control which involves delegating instructional decisions to learners so

they can determine what help they need, what difficulty level or content density they wish to study, in what sequence they wish to learn material, and how much they want to learn using interactive multimedia, simulations, hypermedia, animated concepts and online databases. These attributes suggested that learners have control over the learning material increases, which leads to instructional effectiveness and efficiency, as well as learner independence, mental effort, and motivation.

### Recommendation

The study identified potential benefits accruing to multimedia as indispensable tool for knowledge and information study and retrieval purposes. In addition, there is reduced learning time and cost effectiveness. One other major benefits of multimedia instruction in the library environment is that library user(s) could control instruction at their own pace under less pressure within time limits. Learners too can choose logical route through instructional materials, moving between text, images and sound; could even stop for a time to interpret, analyse, explore, and interact with the documents which facilitate learning and educational interpretation amongst other benefits.

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