

Management, Processing and Distribution of Knowledge in the Emerging Open and Distance Learning Environment

Olugbemiro Jegede

Introduction

The Open and Distance Learning (ODL) environment requires the librarians of the open universities to apply their drive and vigour in their day to day life. They have challenged the administrators, planners, teachers, professionals and other staff to continue to put the distance learner uppermost in all they do. Besides, no infrastructure no matter how extensive; no technology no matter how modern; no curriculum, programme and course no matter how up-to-date can replace the provision of adequate, timely and appropriate library services to students. This is even more important in the case of distance learners who are remotely located from the providing institution. The task of a librarian at any ODL institution has become an enormous one as we march into the modern age of information and communications technologies (ICTs). The challenges are formidable and yet the librarians in many institutions especially of the developing world are continually faced with lack of resources, dwindling volumes of books and printed materials and shrinking space as the student number grows. With the emergence of knowledge management, librarians are now being called to do what they either never learnt during their professional training or forced to add on to their normal schedule. Librarians are no more seen in the restricted sense of taking care of a physically located building for the provision of reading materials to students. They are now becoming knowledge managers undertaking versatile responsibilities. They are, in addition, expected to 'encourage the development and sharing of open learning/distance education materials, expertise, technologies, and other resources'. It is in this regard that I propose to share my thoughts on what I see as the challenges which face librarians in the management, processing and distribution of knowledge in the today's world of education and especially in the emerging open and distance learning environment.

The changing world of education

Education is going through a period of turbulence unprecedented in history. Institutions of higher learning are increasingly being called to justify their existence, be more responsive to their students and the larger society, continually cut cost in the face of dwindling financial allocation from proprietors, and transmit relevant knowledge to students in a world characterised by a movement towards global economy. Added to this, is the explosion and coming unto the mainstream of open and distance learning for a variety of reasons which include being responsive to the need for mass higher education, access and equity, cost-effectiveness using efficient system of delivery, being flexible, fast and yet fluid with the provision of education, and the elimination of distance and isolation of the learner from the institution, teacher and peer. These contemporary changes in education and the delivery of instruction are

significantly affecting and being affected by a paradigm shift with regard to how information and knowledge is transmitted, distributed, accessed and processed. This shift has been propelled by several developments, which interact and integrate to impact on how teaching and learning occur. One of these is the exponential growth in knowledge with which the world is finding difficult to keep pace. We are told that the half-life of the knowledge we currently hold is limited to just three years (Marshall, 1996). This means that in three years' time all the knowledge we currently hold in our long-term memory and guard so jealously will become irrelevant, redundant or dated forcing us to continually 'go back to school' again. Another reason is the emerging postmodernist view of knowledge generation that is responsible for a move from looking at knowledge generation as hierarchical and restrictive to being regarded as non-linear, socially negotiated and should be accessible to anyone and everyone through a variety of ways. This has led to the need to look at the various ways in which knowledge, its generation and transmission can be effectively managed to aid in personal and societal development and global economy.

How knowledge results and grows

Flemming (1996) argues that a collection of data is not information and a collection of pieces of information is not knowledge unless they have some patterns and relations and are contextual. Bellinger (1999) represents this diagrammatically as follows (see Figure 1)

Figure 1 :

Learning takes place when we connect new information to patterns we already hold in our long-term memory. This becomes knowledge. Knowledge therefore becomes ideas and understandings, which can be used to take some action in order to achieve some goals. Knowledge is stored in many ways and places. For example, it may be stored in a person's brain, stored in an organisation, or held in a repository such as a library, or organised in a database. Human beings engage in finding, selecting, distilling, organising, and presenting information in a way that within contexts can be used for several things once patterns and association can be discerned from them. Given the rate at which knowledge is generated today, individuals, organizations, and educational institutions must manage information and knowledge effectively and efficiently. One of the roles of librarians is to assist the distance learner to effectively process knowledge and information available in their libraries to gain wisdom.

Knowledge management

Knowledge management is the capturing, processing, storing and sharing of data, information and knowledge through reliable, fast and rapid access. Knowledge management is increasingly being utilised in many areas of individual, organisational and national operations including strategic planning, decision-making, training, control and effectiveness. Knowledge management is

exerting significant impact on the need for mass education, access and equity, cost-effectiveness and efficient system of delivery of instruction.

The concept of knowledge management is a recent one emanating from commerce and industry where there is increasing need to utilize knowledge for many areas of their operations such as strategic planning, corporate decision making, workplace training, control and effectiveness and competitive edge. According to Davidson (1996) knowledge management in an organisation must align with its mission (i.e. what are we trying to accomplish?), respond to competition (i.e. how do we gain a competitive edge?), should focus on performance (i.e. how do we deliver the results?), and anticipate and address change (i.e. how do we cope with change?). Many organizations have now corporatised knowledge management as a way of continuous development and improvement of their operations and marketing. Hewlett Packard is one example of an organisation which has developed a knowledge management system called 'Knowledge Links' for identifying, codifying and storing company knowledge and accessible to all of its employees.

Knowledge management and open and distance learning

Open and distance learning is changing within a larger global environment that is also changing in a number of ways. First, the world has moved from an industrial-based economy to an information-based one in which knowledge is seen as more profitable than capital services. Indeed there are many organisations existing today just to sell information, and they are doing so with high profits.

Second, the need to transmit the high volume of information and knowledge being generated in an emerging information-based economy has led to the phenomenal development we are witnessing in the area of communication. This development in information and communication technologies has transformed how, where and what is communicated at a speed far greater than what was imagined a few months ago. As a result, the variety of technologies available for transmitting information has changed the world's view of what information and communications are. It has globalised information and has brought world economies to the doorsteps of even the remotest farmer.

These recent developments in technology as mentioned above have two facets, which are now transforming teaching and learning. A few years ago we saw the emergence of affordable, portable, personal computers laden with multimedia capabilities. Next was the availability of networking, which allows global contact asynchronously or synchronously. These have unleashed a tidal wave of unlimited growth of the Internet, which has made the use of the Web in open and distance learning and teaching possible. The indications are that we have not even scratched the surface of the tremendous potential of its use in instruction.

It now means that individuals, institutions and organisations must devise means of managing knowledge in a ways that would be efficient in meeting the needs of their customers. We need to give to the customer or learner the right information and knowledge they require at the point and time needed. For want of time I shall restrict to the role of libraries and librarians in the knowledge management.

Libraries

Before the advent of non-contiguous education which was variously known and labelled as 'correspondence', 'off-campus', 'extension', 'part-time', 'continuing' and 'distance' education, libraries have serviced learners through the professional delivery of information and knowledge. The collection, storage, and distribution of knowledge and information followed as a set pattern of management and served mainly on-campus learners and staff. Their system was closed and not often accessible to the public. The realisation of the need to provide the community with some limited form of information and knowledge led to the establishment in many parts of the world of community libraries. These are open to the public and all the information and knowledge contained in them is accessible to all. What needs to be mentioned is that the 'knowledge' within libraries is not strictly speaking managed as such. They are, from our definition of knowledge above, pieces of information and data which the learner or reader would need to acquire and attach some patterns and understanding to in order to become knowledgeable. However, libraries have always engaged in and perfected their knowledge management system, which focuses on the acquisition, storage, and distribution of knowledge to their customers. There has been a shift in non-contiguous education both in practice and in nomenclature as outlined above. Now variously known as 'open', 'distributed', 'flexible', 'synchronous', asynchronous', and 'virtual', the offering of education at a distance has now taken a new dimension in which technology plays an increasingly dominant roll in the delivery of instruction and therefore of information and knowledge.

Furthermore, the emerging focus or refocus on life-long and life-wide learning will mean that libraries need to manage literacy instruction to the public in greater dimension than currently occurs. The library is therefore facing the challenge of providing information and knowledge to customers through reliable, rapid and secure access. Several libraries are therefore turning to the Internet as a solution and they are going electronic or virtual.

Virtual library and virtual librarianship

Virtual libraries started as a small experiment in the USA less than ten years ago are having an effect all over the world. Many developing countries and institutions are establishing electronic or virtual libraries. Nigeria has recently launched its nation-wide virtual library project and it is the most extensive national virtual libraries so far.

Scanning through the literature, it is noticed that the main reasons for establishing electronic library resources include -

- to provide easy, fast, round-the-clock and flexible access to the retrieve and processing of information to support learning,
- to eliminate unnecessary duplication and thereby maximise the cost-effective use of material resources,
- to provide a friendly learner-driven library support services to all learners, especially those remotely located from institutions and necessary facilities,
- to harness current development and global effort in information and communications technology for the provision of education for all, and
- to provide greater opportunity as well as reliable platform for research, ease of collection and monitoring of user statistics of library resources.

The justification for Virtual Libraries is not far fetched. Any educational system or institution worth its salt must provide information and material resources centre to support teaching, learning and research. Library resources centres provide access to literature and space for private study and referencing. Traditionally, library resources are housed in physical space locations, often hold multiple copies of materials, require extensive human and financial resources, and demand constant updating, replacement, and refurbishment of the resources. Apart from the fact that this situation exerts extensive strain on the system, it depletes resources, and increases wastage. In addition, as has occurred in recent times, it has been difficult if not impossible to keep up with the library resources needs of the ever-growing population of students and staff in developing countries. As a result it is possible to proffer as many reasons as one may think of but just a handful of the more listed here for an electronic library system.

First, is the issue of the sheer size and scope of library resources provisions for education today. With the constant explosion of knowledge each institution will continue to require both qualitative and quantitative expansions to cope up with the resources required for teaching and learning. As a result an alternative system which is cost-effective, relatively cheap to maintain, and provides access to current and latest materials needs to be found. Electronic library resources can be shared by all students within an institution or all institutions within a country at a fraction of the total cost required to support as all the physical libraries within the higher education system in the country. Furthermore, it is projected that 1,000 electronic databases/resources are equivalent to 300,000 volumes of printed materials. These will require 2,650 square metres of shelving space alone, which is saved if the library is electronic.

Second, the use of distance education methods to educate people in massive scales has become quite pervasive all over the world due to its obvious

advantages in providing education services without compromising quality. The progression is that for the immediate future distance education mode would be the default mode rather the alternative mode. Therefore, the availability of a library resources centre, no matter how remotely located, that is accessible via electronic means at the convenience of students and staff, is of utmost importance. All students can share this sort of electronic provision in the system with little or no difficulty at all.

Third, the phenomenal development in telecommunications, computing and information and knowledge management has led to the advent and use of virtual education. The trend now is for institutions to go virtual in the delivery of instruction. A virtual education institution, as defined by the Commonwealth of Learning (COL), is an organisation that directly, or indirectly, uses information and communications technology (ICT) to provide educational services; this includes traditional agencies such as universities or non-educational organisations that distribute virtual educational services. Virtual education is profoundly affecting access to educational services; online distance learning is less onerous than a correspondence course. Furthermore, virtual learning has affected the ways and means with which people learn, the role of community tele-learning centers which provide access to ICTs has assumed greater significance.

Fourth, in recent times post-secondary educational institutions have been under tremendous pressure for change as a response to diminishing budget, need to reach students other than their traditional clientele, and adapt current development in information technology for the delivery of instruction. As a result, many institutions of higher learning worldwide have turned towards electronic networking in academic services. In summary, some of the advantages of an electronic library resources system are mentioned in Table 1.

Table 1. Comparison of Library Services

No	Library Services	Traditional Library	Electronic Library
1	Opening hours	Limited	Round-the-clock, all- the-year round
2	Student remote access	Not possible	Possible
3	Services to non-traditional students	Grossly limited	Online delivery
4	Access to resources	Limited to shelf	Instant and

		search in physical locations	electronic
5	Search engines	Manual and tedious	Electronic, easy and extensive
6	Time factor	Does not save time, in fact wastes time	Significant saving, no travel time required
7	Seating space and Shelf space	No saving	No seating space required
8	Manpower requirements	High	Low
9	Multiple access	Not flexible	Easy and cheap
10	Resource sharing	Inconvenient, slow turnaround time	Convenient, fast turn-around
11	Migration	Limited	Use the Internet to access other libraries and materials

Challenges of modern-day librarianship

The challenges, which face librarians in the management, processing and distribution of knowledge in the today's world of education and especially the emerging open, and distance learning environment, are multi-faceted and compelling.

As you may well imagine, the emergence of virtual libraries has thrown up several challenges to nations, institutions and librarians. The training of library professions will now have to change. Librarians must first and foremost be proficient in the use of ICTs and especially web-based environment and become conversant with the daily changes in and on the Internet. It also means that for librarians in open and distance learning, understanding all of the issues, which surround the provision of knowledge and information resources to remotely located learners must be central to their training. Above all, improvisation especially in rural areas where the infrastructural provisions are either inadequate or non-existent becomes a challenge.

However, there is another challenge which we must not lose sight of. In spite of all the noise being made about the ubiquity of emerging information and communications technologies, thousands of learners in rural and remote locations or even in urban areas but cannot access the Internet due to financial means; and this still needs to be catered for. At the moment, from my subjective observation, about 90 per cent of those who live in developing countries are yet to have any contact in one form or the other to the Internet due to illiteracy, poverty, physical distance or bureaucratic obstacles. Even for those who have access to the Internet, the issue of free access to all libraries or to all the information in libraries, which may not be those they are directly registered with, needs to be sorted out.

For librarians and administrators, providing electronic libraries is one thing but proving distance learners with library skills is another. It might not just be taking what is available for on-campus on-site users and dumping it on the Internet. Using the Internet requires completely different protocols and orientation, and one would hope that libraries would not fall into the same mistakes that web-based instructional developers are making. A secondary consideration is that in the old system, knowledge management was undertaken in the libraries by a few senior staff, especially the librarian and senior administrators. The concept of knowledge management makes available all in-house information and knowledge including decision making to all staff in the organisation.

My limited experience with the electronic library of the Open University of Hong Kong and the Virtual Library project for Nigeria brings me to the next challenge. One great challenge that has arisen today is how do we train a Virtual or an Electronic Librarian? What should constitute the curriculum of a degree in Virtual Librarianship considering that the various areas of knowledge and information that a librarian must learn continue to increase by the day? Who should do the training of Virtual Librarians when our current crop of librarians were not trained as Virtual Librarians and have not the opportunity of becoming familiar or proficient in virtual librarianship? For a start, we may have to look for support and assistance in the direction of current databases in the world such as the International Centre for Distance Learning (ICDL) in the UK, the CRIDAL of The Open University of Hong Kong, The World Bank Global Distance Education Network, and the recently established Commonwealth Open and Distance Learning Knowledge Network (CODLINK).

Another area of formidable challenge is how librarians can help distance learners to learn more efficiently. Distance learners are used to self-paced individualised learning supplemented or complemented by some tutorials and some form of conferencing with peers and tutors. Modern distance learners cannot avoid the explosion of knowledge or the necessity for using ICT in their studies, especially for retrieving information. Therefore, in addition to providing information and knowledge, libraries and organisations should provide them with guidelines for managing the knowledge they are bombarded with in libraries, databases and

other sources. How for example should a learner browse through hundreds of materials and web sites systematically to eliminate what is not significant or relevant to the information and knowledge needed for the course? How can learners keep their mind focused on accessing relevant information while ploughing through hundreds of web sites capable of sidetracking them? We need, as facilitators of learning, to guide learners towards efficient management of knowledge.

Conclusion

As professionals interested in being at the forefront of development in our respective areas of specialization as well as in ODL in general, we need to consider many of the issues I have raised above. I intentionally decided to bring them up again with a view to reiterating some of the salient features of the changing needs of the emerging Virtual Librarian. We also need to deliberate further on issues such as how to train a Virtual Librarian, how to create an effective working environment for a Virtual Librarian, and how the librarian can meaningfully contribute to the quality of learning by a distance learner will engage our discussions.

References

Bellinger, G. (1999). *Knowledge management – emerging perspectives*.

<http://www.outsights.com/systems/kmgmt/kmgmt.htm>

Davidson, M. (1996). *The transformation of management*. New York: Butterworth-Heinemann.

Flemming, N. (1996). *Coping with a revolution: Will the Internet change learning?* Canterbury, New Zealand: Lincoln University.

Marshall, (1996)