

Mobile Phones and Digital Library Services in Open and Distance Learning

Loveth Ogoegbunam Ekwueme¹ and Grace Ndukwe Elem²

Abstract

Purpose: The study aims to provide an overview of the concept and history of mobile phones and distance learning, characteristics of digital libraries, and the application of mobile phones in libraries in open and distance learning (ODL).

Design/methodology/approach: A comprehensive literature search was conducted through the National Open University of Nigeria Library and several other databases to identify how mobile phones could be used in accessing digital library services by students in open and distance learning system, and to highlight its benefits and disadvantages.

Key finding(s): Mobile phones have evolved over times and the availability of the internet has necessitated the use of a smartphone, palmtops and android phones by distance learners in accessing library services provided in digital and electronic formats faster from their different locations and at any given time. Digital libraries must find a means of reaching out to the remote users through the use of mobile phones for effective information processing, delivery and retrieval.

Research limitation(s): The study only highlights the concept of mobile phones, characteristics of digital libraries, and application of mobile phones in library services in open and distance learning (ODL) without detailed account on library databases and an evaluation on the application of mobile phones in ODL library services.

Practical implication(s): The study exposes the history of mobile phones, their uses in the provision and accessibility of library services by distance learners. This will help the distance learners in knowing library services and resources they can access from digital libraries at the comfort of their locations with their mobile phones without visiting the library.

Contribution to knowledge: This study claims to be the pioneer with the perceptive on the application of mobile phones in digital library services in open and distance learning in Nigeria.

Paper type: Review.

Keywords: Mobile phones; Open and distance learning (ODL); Digital libraries.

¹ National Open University of Nigeria. Email: loveth.ekwueme@yahoo.com

² Ibid. Email: gelem@noun.edu.ng

Introduction

Rapid advancement in information and communication technologies has promoted the production of mobile devices for communication. Most open and distance learning students need access to library resources and services at home and in their working places. Therefore, it is necessary to design the library resources and services into digital and online format which can be accessed through mobile devices and tools. The most popularly used mobile devices are mobile phones which provide voice services, and transmit data, and text from one user to another.

Mobile phones are ideal tools in libraries in open and distance learning (ODL). They help in bringing library resources and services to learners wherever and whenever they need them. Mobile phones are devices that can receive and make calls using a radio frequency carrier. They use frequencies transmitted by cellular towers to connect calls between two devices. Mobile phones are inevitable tools for information communication in the contemporary society. Mobile phone as wireless handheld device allows users, among other features, to make calls and send text messages. Today's mobile phones are not only for making and receiving calls, and text message, but have included some features such as web browsers, games, camera as well as video players and even navigational systems.

History of mobile phones

The history of mobile phones from 1973 as opined by Goodwin (2015), the first handheld mobile phone was demonstrated in 1973 by John F. Mitchell and Martin Cooper of Motorola weighing c.4.4 lbs (2kg). The first commercial automated cellular network was launched in Japan by Nippon Telegraph and Telephone in 1979. Then in 1981 Nordic Mobile Telephone (NMT) system was launched in Denmark, Finland, Norway and Sweden. Other countries followed in the mid of 1980s. The commercially handheld cellular mobile phone- the Motorola Dyna TAC 8000x was launched in 1984. All the first generation system was used for simultaneous calls, but used analog technology (Charny, 2001).

In 1991, the second generation digital cellular technology was launched in Finland by Radiolinja on the Global System for Mobile Communication (GSM) standard. These digital Cellular phones challenged the incumbent network operators because it had advanced mobility and more services. Ten years later in 2001, the third generation mobile phones emerged and was launched in Japan by NTT DoCoMo on the Wideband Code Division Multiple Access (WCDMA) standard, this was followed by 3.5G, 3G or turbo 3G with enhanced high-speed packet

access and a higher data transfer and capacity (Charny, 2001). The launch of the Iphone in 2007 resulted in smart phone becoming available to the general public. In 2009 it became clear that the 3G Network would be overwhelmed by the growth of bandwidth intensive application. This prompted the industry to look for data optimized fourth-generation technologies, with the promise of speed improvements up to tenfold over existing 3G technologies. The 4G were different from 3G because it eliminated the circuit switching instead of employing an all-IP network. The 4G ushered in the age of local area network (LAN) and wide area network (WAN) via voice over internet protocol (VOLP). The use of mobile phones and computers led to the use of internets (Kumar, 2014).

The internet and mobile resources have revolutionized the ways libraries acquire, process, package, and disseminate information to both on campus and off campus library users. Mobile phones are one aspect of mobile technologies that can be used by libraries to disseminate information to students' especially in open and distance learning institutions from digital libraries.

Digital libraries

Digital libraries provide electronic resources and prints in digital formats and can be accessed through the use of computers and other mobile technologies. The contents of digital libraries can be stored and accessed remotely by library users irrespective of their location through local area network(LAN).According to Trivedi (2010), digital libraries are organizations that provide resources, including the specialized staff, to select, structure, offer intellectual access to interpret, distribute, preserve the integrity of and ensure the persistence overtime of collections of digital works so that they are readily available for use by a defined community or set of communities.

Digital libraries provide users with a very large information and knowledge in the form of images and texts which are produced and accessed through technological devices. Digital library collections are made of scholarly publications which are transformed into digital formats. In this kind of library, a significant proportion of the resources are available in machine-readable format as opposed to print or microforms (Nwokocha& Chimah,2013). This makes the resources easily available to users who have access to computers and the internet.

Characteristics of digital libraries

- Digital libraries as noted by Aina, Mutule and Tiamuyu (2008) exist as virtual that is not as a physical entity.

- Provide remote access to information over computer networks.
- Facilitate immediate and simultaneous access to information.
- They exist as multimedia object in the form of text, video, sound and graphics and animations.
- Can be accessed from anywhere, anytime, subject to restrictions that may be imposed by standards, firewalls and other infrastructures.

These characteristics confirm the content of digital libraries involve the conversion of document from print into electronic formats. This process is known as digitization. This can be achieved through scanning such materials with a scanner and storing them on a computer which can be accessed locally and internationally through the internet. These digital library resources can be stored and accessed through the use of mobile technologies such as, mobile phones, palmtops, laptops and computers. The remote access to resources and services available in digital libraries, anytime and anywhere, plays a vital role in the education of distance learners.

Meaning of open and distance learning (ODL)

Open and distance learning is a way of providing learning opportunities that is characterized by the separation of teacher and learner in time or place, or both. Open and distance learning involves all varieties of learning such as full-time studies, correspondence studies, undergraduate certifications, postgraduate certification, workplace and professional training, and lifelong education (Commonwealth of Learning, 2015).

Open and distance education has developed in two major directions, the individual flexible teaching and extended classroom mode. The individual mode allows students to start the class at any time, study in isolation and communicate with instructors and classmates through asynchronous tools. While the extended classroom model organizes students into groups, requiring them to meet at the local study center and it allows the students to use interactive technologies such as video conferencing ((Rekkedal & Dye, 2007).

The goals of open and distance learning are to provide an alternative learning to traditional education in a formal classroom and on campus education where people can obtain training and certificate at all levels of education to better their living in the society. Open and distance learning is aimed at battling illiteracy in developing countries, providing training for economic growth. According to Al- Faheed (2009), distance education relies heavily on technologies of delivery, print materials,

radio and television broadcasting, computer conferencing, electronic mail, interactive video, satellite telecommunication and multimedia computer technology are all used to promote student teacher interaction and provide necessary feedback to the learner at a distance.

Mobile Phone and digital library

Mobile phones are wireless technologies which allow the transmission of data-text, voice, video or image through radio waves. Mobile phones give users continuous access to network resources without limitation of time and location. Digital libraries came into existence with the developments of technology. Digital libraries have moved outside the physical libraries to give access to library resources and services without limitation of time and location (Al-Fahad, 2009). Digital libraries use these mobile devices because of their fast and easy convergence of information to library users. These digital devices also take the library resources and services to the users where they are. Mobile phones serve as new vehicles for information dissemination to various users of the library. Mobile devices used in digital libraries are:

- Cell phones
- iPods/Mps players
- Tablets
- Personal Digital Assistant (PDAs)
- Smart phones
- Blackberry
- Pocket-size computers
- Organizers
- Palmtops

Mobile phones and other mobile devices present a new exciting opportunity for digital library services to all ages. Distance learners no longer need to visit a library to have access to a computer and the internet to access information from digital collection but can experience digital collections through their mobile phone. This means that mobile phone offers tremendous flexibility to the distance learner who wants to take advantage of library services provided in the digital libraries for information and research needs.

Distance learning library services are library services in support of college, university or other post-secondary courses and programs offered away from main campus, or in the absence of a traditional campus and regardless of where credit is given (ACRL, 2008). According to Hopper

(2010), most common library services offered to distance learners to include “remote online information literacy tutorials; research guides for academic and special interest topics, online library guides, Ask-A Librarian (chat, e-mail, or telephone) inter library loan, electronic reserves, reference services and document delivery service.

Application of mobile phones in digital library services

Digital library services are used in connecting distance learners to the resources available in the library. Librarians have to take advantage of an increasing number of smart phones to disseminate information, market and ensure access to library services provided in digital libraries. The digital library services which students can access through their mobile phones are:

- Library short message system (SMS)
- Mobile Library Databases
- Mobile Audio Library Tours
- Request for Document delivery
- Online access to library catalogue
- Ask-A-Librarian
- Inter-Library Co-operation
- Wi-Fi - Internet Access
- News and Events
- E-mail

Library short message system alert

Digital libraries in open and distance learning institutions can use short message system (SMS) alert services to offer library services to distance learners to solve their information and research needs. The followings are the digital library services that distance learners can access through SMS alerts with their mobile phones:

- Request for reservation of books and information and the availability of reserved documents for collection.
- Acknowledging the distance learner about the renewal of a book.
- To inform distance learners on the existence Online Public Access Catalogue.
- Reminding the users about date due notices and overdue charges.
- Send suggestions to Librarians on library resources needed by users that are not available in the library.
- Sending answers to reference questions to distance learners via SMS.
- Sending alerts on - upcoming events and breaking news.

- Requesting for the opening hours of the library.
- Checking the availability of information resources and renewing of books.

Mobile library databases

Library users can access various resources from the digital libraries databases through their mobile phones. This helps distance learners to access information on electronic resources.

Mobile audio/visual library tours

Digital librarians provide audio tours showing the various sections of the library and their services to users. These services can be viewed and listened to with mobile phones. The library visual and audio tour can be used in teaching during orientation and information literacy programs. They allow distance learners, who may not have time to attend these programs, to download the programs from the library website, listen and participate in the programs with their mobile phones.

Request for document delivery

Distance learners can request for the delivery of some information resource to their homes and workplaces from the library through their mobile phone. The digital library can support the transfer of scanned images and collections to the user's devices.

Online access to library catalogue

The library catalogue is the bibliographic details of all the library holdings. These bibliographical details of prints and non-prints in the library can be accessed through mobile phones when they are online regarded as Online Public Access Catalogue (OPAC). Through the OPAC the learner can use his/her mobile phone to do integrated search. The Online Computer of Library Centre (OCLCs) WorldCat mobile application pilot allows distance learners to search for books and other information sources through a web application using PDA and other smart phones

Ask-a-librarian reference services

Digital library librarians provide reference services to users through their mobile phones using live chat and text messages. The Ask – A – Librarian services allows patrons to submit queries on research to librarians through text messages while librarians provide instant answers and links for further studies.

Inter-library cooperation

The patron using a mobile phone can request for information resources that are available in another library through his/her institutional digital library. The library may notify the patron through SMS alert on the availability of his/her requested resource.

Wi-Fi internet access

The provision of Wi-Fi network in the library allows patrons to access the information online from the library and search for other information from the web through mobile phones. It also allows online chat between patron and the library staff. This can be possible when the patron gets the MAC address (Media Access Control Address) to access the Wi-Fi of the library.

News and events

In digital libraries, distance learners can receive information on scholarly publications, adverts, orientation programs, book call, events, awards, notice of public holidays, breaking news, opening and closing hours of the library through mobile phones.

Electronic mail

E-Mail reference services provide assistance to distance learners. In a digital library reference services, distance learners can submit their questions, and can get answers in their e-mail inbox from the librarian.

Benefits of using mobile phones in digital library services

Applications of mobile telephones in the delivery of library and information services in digital libraries have many advantages. Libraries have used mobile phones in providing many services to patrons. Suzuki in Kakan and Kanyengo (2009) opined that mobile phone delivers new information services to meet the needs of users, enhance user friendliness and receive prompt feedbacks from users. The followings are some of the benefits in using mobile phones with digital library services:

- It is user friendly
- It is used in personalized services like selective dissemination of information and addressing reference queries of users
- Encourages users' participation
- Ensures limitless access to information from the library with their phones from anywhere and anytime.
- It is time saving for patrons and library staff

- Solves the problem of accommodation in the library.

Disadvantages of using mobile phones in digital libraries

Some of the disadvantages of using mobile phones in digital library services include:

- Setting up mobile interface services is very costly.
- The devices can expose valuable data to unauthorized people.
- Students may see the short text message service/chat services as a social interaction rather than a mean of sending and receiving vital and educational information.
- Some students may not like to disclose their personal phone number to the library management for privacy reasons.

Conclusion

Open and distance learning has come to stay, so digital libraries must find a mean of reaching out to the remote users through the use of mobile phones for effective information processing and delivery. In the era of information explosion and the vital need for distance education to eradicate poverty, illiteracy and to improve socioeconomic status of citizens, digital libraries in distance learning environment are faced with more challenges in providing resources and services for these “brick” and “click” institutions. Despite these challenges libraries face, mobile devices offer tremendous flexible services to those who want to take advantage of library services with a simple 3G (3 generation) connection. Users can access e-books, digital resources and multimedia contents of the institutional digital libraries and other libraries through their easy to use smart gadgets. Some of these challenges could be remedied through provision of effective funding to the digital libraries, lowering of call tariffs by service providers, training of library staff and users on the effective and wise use of mobile phones in processing, storing and accessing information from the digital library websites. Besides this there is a need for ensuring security of the contents of the digital library resources.

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