

OPEN AND DISTANCE LEARNING AS A TOOL FOR ACQUISITION OF MATHEMATICS KNOWLEDGE IN HUMAN ENDEAVOUR

Charles C. C. Chukwurah
&
Obed C. Obi

Abstract

The right to education should be both equal and universal to every member of the society; and education which is one of the basic ingredients of life must be made accessible to every category of the citizenry. The usefulness of mathematical knowledge is a sine-qua-non in human existence and it must be pursued rigorously by all and sundry. Thus, this paper was aimed at identifying the effectiveness of open and distance education as a tool for the actualization of mathematics knowledge in human endeavour. The study adopted descriptive survey design with a population of 360 students of National Open University of Nigeria. The instrument for data collection was Open Distance Learning Mathematics Questionnaire (ODLMQ) which consisted of 10 items and was based on a five-point rating scale of descriptive survey design. The results showed that open and distance education helped the generality of the people to acquire mathematics education at their own location and pace. Based on the findings, it was recommended that open and distance learning should be encouraged for the educational needs of the citizenry.

Key Words: ICT - Information Communication Technology, ODL – Open and Distance Learning, Education, Mathematics.

INTRODUCTION

Education as an integral venture in human existence is an agent of destiny actualization. It is an indispensable tool that modifies and moulds human beings from infancy till death. In fact, education is meant to establish fundamental structure for human cycle of knowledge enhancement. Education envelops a positive avenue for learning and acquisition of knowledge, skills etc which acts as a catalyst for energy utilization and talent extraction.

The knowledge of mathematics is a sine-qua-non to the generality of intellectual development. Mathematics remains the keystone of an education system which envelops the chances of the prosperity of individuals and society. It can be obtained in open and distance learning system through course development which is an integral part of instructional

design. Its courses are designed and developed in line with an approved curriculum to meet the educational needs of the target group and it could be packaged through print and media. The essence of mathematics is unique in human nature and everybody needs mathematical knowledge either for professionalism or for mere understanding. Due to its nature, it tends to be apprehensive, the need for inculcation of its knowledge to the populace is paramount and that can be generally achieved through open and distance learning mode. This is possible due to the availability of technological facilities either in offices or at homes in recent times. With distance learning, one can at interval engage oneself in learning mathematics without teachers in so far as intellectually structured learning materials or internet applications are on hand. But with the emergence of ICT, knowledge of mathematics is optimally

accessible once the available tools are applied and utilized. Many a time, the difficult areas of mathematics are simplified through the use of appropriate apps.

Learning, which is basically an upshot of education, can be obtained through various means. Apart from the traditional method of learning in which learners are fully dependent on the teachers and teachers act as agents of transformation and knowledge inculcation, there are various means in which teaching and learning can be accessed and utilized. Learning which according to Chauchan (1978) “is a relatively enduring change in behavior which is a function of prior behavior” is a quintessence of knowledge and a path of behavioral modification. Learning occupies a very important position in the life of the individual right from birth till death.

The Federal Republic of Nigeria (FRN, 2004) in the National Policy on Education (NPE) made it known that education is based on the provision of equal access to educational opportunities for all citizens of the country at the primary, secondary and tertiary levels both inside and outside the formal school system. It equally stated that every Nigerian child shall have a right to equal educational opportunities irrespective of any real or imagined disabilities each according to his or her ability. To further buttress the magnitude of open and distance education, the FRN states the following four goals:

- To provide access to quality education and equity in educational opportunities for those who otherwise would have been denied.
- To meet special needs of employers by mounting special

certificate courses for their employees at their work place.

- To encourage internationalization especially of tertiary education curricula.
- To ameliorate the effect of internal and external brain drain in tertiary institutions by utilizing Nigerian experts as teachers regardless of their locations or places of work.

The term “open and distance learning” reflects both the fact that all or most of the teaching is conducted by someone who is away from the learner, and that mission aims to include greater dimensions of openness and flexibility, whether in terms of access, curriculum or other elements of structure (Saima, Joyshree, Shalabh & Asoke, 2017). National Open University of Nigeria (2006) defines open learning as any form of learning in which the process enables individual learners to exercise choice over any one or more of a number of aspects of learning. It explains distance education as an educational process in which a significant proportion of the teaching is conducted by someone removed in space and/or time from the learners. Holmberg (1990) defined distance education as “the various forms of teaching and learning at all levels which are not under the continuous, immediate supervision of tutors present with their learners in lecture rooms”. Jeffries, Lewis, Meeds & Merrit (1990) saw open learning as “any form of learning in which the provider enables individual learners exercise choice over any one or more of a number of aspects of learning”. Looking at the definitions of distance education and open learning, one will notice the interrelatedness which implies that they are almost the same. Opening learning as a part of education system has been a global phenomenon for many decades

but, in Nigeria as far back as early 1960s, the need to have an all inclusive contact, no contact and part-time educational setting has given rise to the embracement of open learning system such as Open University and National Teachers Institute, Kaduna. Alternative is always good for proper stratification of life and activity, because monotony often leads to apathy. This truism actually led the government, as far back as 1977, to begin searching for alternative models to the traditional conventional system. In NOUN Students Handbook (2009), the importance of Open and Distance Education in Nigeria were stated as follows:

- It provides education for all and promotes lifelong learning in Nigeria, fills the gap created by the closure of sub-standard outreach/satellite campuses across the nation and is cost-effective in the education delivery system.
- The NOUN will provide a flexible education delivery system in our country, which will help meet up with the economic realities where a lot of people desire to work and learn simultaneously. Open and Distance Learning also maximizes the utilization of academic personnel and is therefore in the long run a cost saving measure in Nigeria.
- Open and Distance Learning helps on-the-job teacher training as more teachers can receive education without leaving their immediate vicinity. Some of the other long-term benefits of ODL are poverty eradication, and life-long education. ODL can help with the provision of national orientation and non-formal education and provide education to reach the un-reached i.e. girls

and women who cannot leave their homes regularly (as they live in Purdah, etc).

- Technical and Vocational Education have in recent years played important roles in assisting individuals to improve their employment prospects in a rapidly changing socio-economic environment. In this regard, the role of NOUN in open and distance learning in the field of technical and vocational education is significant.
- ODL responds effectively to the growing demand of working adults or any others who have difficulties in getting training in conventional education because of lack of flexibility in the timing and duration of academic programmes. ODL provides an opportunity for empowerment of those most disadvantaged example (the unemployed, the physically challenged, women and ethnic minorities), as they can embark on courses of their choice within their vicinity.
- ODL can be used as a platform for promoting national ethics and values. It can also allow for the dissemination of knowledge and information to target groups, with respect to government policies and activities thereby providing better understanding of government's intentions at all times. This will improve general understanding, reduce misconceptions and promote social and political harmony.

Open and Distance education is geared towards widening the knowledge horizon of the learners as accessibility to education is achievable and realistic. ODL paves luxuriant opportunities to different categories of individuals. This is to ensure that education is easily reached anywhere, anytime and at the

learner's pace. The usefulness of open and distance learning cannot be overestimated due to the meeting of the educational needs of the adult teeming population. All over the world, open and distance education is primarily mapped out for: people of varied professions who desire to update their knowledge and skills or courses of their choice for their continuing professional entrepreneurial development; those who left school for one reason or the other, but having matured to make a re-entry into the knowledge arena; and those who did not have the opportunity to be enrolled in school but have avid interest to obtain basic education for their future survival.

The continually increasing demand for education by the generality of the populace cannot be fully met by the long-established face-to-face classroom instructional delivery taking cognizance of the population of the country and the challenging basis for resources in the midst of the compelling needs of the general public. Distance education involves the use of a range of media such as print, written correspondence, audio, video, computer based media and networks as well as multimedia facilities for the presentation of information and for communication between the learning centre and the learners.

The instructional mode offers opportunity for those who are engaged into one livelihood or the other to acquire knowledge, skills and techniques which may be relevant to their current work situation. Distance education therefore affords people with the prospect to advance their academic qualification without resigning their employment and without being detached from their

dwelling. This learning structure allows those in the teaching profession to upgrade the knowledge and is very flexible in terms of age and time and at the expediency of pace dictated by the students. As a result of population growth and modernization, the need for accessible lifelong formal education is swelling worldwide. Open universities have several advantages in meeting these needs. They have a broader reach, through their respective countries, than any other institution of higher education. Many of their degree courses can serve double duty as lifelong learning for adults who have not earned a university degree, and as a way to broaden or update expertise for those who have such a degree. By the very fact that they are universities, they convey status to the students, including those who are not engaged in degree programs. It has been noted that adult formal education is often undertaken partly to gain self-esteem and impress others. Open universities' costs are generally modest for the level and quality of training provided (Savukinas, Jackson and Gaiwei, 2002).

Research Question

To what extent has open and distance learning helped students to achieve the knowledge of mathematics?

Method

The study employed the descriptive survey design. The population of 360 students of National Open University of Nigeria Awka Study Centre was used for the study. The instrument for data collection was Open Distance Learning Mathematics Questionnaire (ODLMQ) developed by the researcher and face and content validity were authenticated by

experts in mathematics education and measurement and evaluation. The instrument consisted of 10 items imploring for answers on the research question posed for the study. The respondents were requested to indicate their responses to the questionnaire on a five-point Likert scale of Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree which were

apportioned 5, 4, 3, 2,1 points respectively. In the analysis of data, mean scores were used to answer the research question. The bench-mark for agreement was 2.50 and above, while below 2.50 was adjudged disagreed.

Results

The results of the study are presented in the Table 1.

Table 1: Mean Scores of Respondents on the extent to which open and distance learning system has helped students to achieve the knowledge of mathematics.

S/N	Items	N	Mean	SD σ	Decision
1.	Open and Distance Education provides access to mathematics knowledge.	360	2.65	1.12	Agree
2.	Mathematics can easily be understood by the utilization of open learning facilities.	360	3.05	1.51	Agree
3.	Distance learning affords learning opportunities to the populace who were displaced in education scheme of things.	360	3.43	1.62	Agree
4.	With instructional media, distance education can foster educational equity to the teeming population of the nation.	360	5.51	1.34	Agree
5.	Good Apps such as YouTube can promote mathematical knowledge.	360	2.67	1.33	Agree
6.	Some complex mathematics questions can be learnt through open/online learning.	360	3.72	1.72	Agree
7.	With open learning, mathematics students gain and retain concrete knowledge.	360	2.74	1.42	Agree
8.	With media and ICT, mathematics students achieve a lot.	360	3.05	1.53	Agree
9.	It enables students to move at their own pace.	360	3.61	1.64	Agree
10.	Online learning in ODL opens greater prospect in the global learning community.	360	2.56	1.21	Agree
	Cluster Mean	360	3.10	1.44	

The Table 1 reveals that all the items 1-10 are both crucial and critical to achieving mathematical knowledge through open and distance learning because all the

items have mean scores above 2.50 on the five-point likert rating scale. For that reason, they were accepted.

Discussion

The finding shows that open and distance learning system helps students in achieving the knowledge of mathematics. It portrays the impact of ODL on the common people in the society. Education, which is the right of every citizen that leads to full integration of the individual into the community, must be deeply enhanced. The right to education means that educational opportunity must be both equal and universal. With the availability and accessibility of ICT, mathematical knowledge could be acquired right inside someone's home due to ICT globalization. In the educational process, people are essential. The role of teachers is always crucial. But, no matter the importance of a teacher, the human component has limits and other involvements need to be brought to bear strongly on the process of delivery and transformation of knowledge. It is the potential and role of technologies in contributing to improvement in the effectiveness and efficiency of this profoundly human exercise that is basically the resourceful role of open learning system. The learning is self paced with printed and online materials. That open and distance learning opens greater prospects in the global learning community is both idealistic and realistic. This is in line with Haddad and Draxler (2002) who stated thus "advancements in ICTs have revolutionized the world economy. Information now can be collected, analyzed, and communicated with increasing speed through dramatic innovations in information technology, rapid international communication and transportation capacity, and massive technological connections across

national boundaries. Any service that can be digitized and transmitted can be produced and sold anywhere".

Conclusion

The study has justifiably examined the significance and impact of open and distance learning on humanity as it relates to mathematics knowledge. Mathematics as a special and globally affirmed subject-matter should be learnt and enhanced by means of numerous learning channels of which the open and distance learning mode is inclusive for the totality of national development. Despite the predisposed perceptual assessment of ODL, it has continued to greatly advance on the areas of academic qualification update, research analysis and knowledge enhancement.

Recommendations

Based on the discussions and findings, the following recommendations are made:

1. Government should make open and distance education an integral and functional learning mode for national integration and development.
2. Technological gadgets which are almost a household possession with multitasking functions should be used for the expansion of mathematics knowledge.
3. Due to the indispensability of mathematics in the global scheme of things, the members of the society are encouraged to be engaged with open and distance learning for arithmetical and statistical knowledge enhancement.
4. Mathematics teachers must engage themselves with open and distance learning in order to build up their knowledge.
5. Mathematics researchers should

- make best use of open and distance learning curriculum for fostering of national integration.
6. The general public, both professionals and non-professionals, should maximally utilize the availability of open and distance education for both knowledge updating and inculcation.
 7. Learners in open and distance education should use the best tools of technology for proper harnessing of knowledge.
 8. Governments and private companies should install internet network such as wi-fi for free browsing.

References

- Chauhan, S. S. (1987). *Advanced educational psychology*. New Delhi: Vikas Prints.
- Federal Republic of Nigeria (2004). *National policy on education*. Yaba: NERDC Press
- Haddad, W. & Draxler, A. (2002). *Technologies for education: potentials, and prospects*. U S A : Knowledge Enterprise, Inc.
- Holmberg, B. (1990). *Perspective of research on distance education*, 2nd ed. Hagne: Zentralcs Institute fur fernstudienforschung.
- Jeffries, C., Lewis, R., Meeds, J. & Merrit, R. (1990). *A- Z of open learning*. Cambridge : National Extension College
- NOUN (2006). A Profile of National

Open University of Nigeria. Lagos.

- NOUN (2008). *Students' Handbook of National Open University of Nigeria*. Lagos: The Regent Printing and Publishing.
- Saima, G., Joyshree, N., Shalabh, A. & Asoke, N. (2017). Open and distance learning (ODL) education system: past, present and future: A systematic study of an alternative education system. *Journal of Global Research in Computer Science*
- Savukinas, R., Jackon, G. & Gaiwei, X. (2002). Open universities: A revolution in lifelong learning. In Haddad, W. and Draxler, A. (Ed). *Technologies for Education: Potentials, and Prospects*. USA: Knowledge Enterprise, Inc.
- Scott, S. (2017). Distance learning: best apps, tools and online services. <http://www.huffingtonpost.com/scott-steinberg/distance-learning-best>. Accessed Oct. 4, 2017.