© JHE 2020
PRINT: ISSN 0970-9274 ONLINE: ISSN 2456-6608
J Hum Ecol, 72(1-3): 97-103 (2020)
DOI: 10.31901/24566608.2020/72.1-3.3274

Massive Open Online Courses (MOOCs) in Rural and Marginalized Area: Evaluation and Impact

Dare Ebenezer Fatumo[1] and Olusesan Adeyemi Adelabu[2]

[1]Computer Science Department, Faculty of Science and Agriculture,
University of Fort Hare, Alice Campus, South Africa
E-mail: ebenfatumo@gmail.com
[2]Department of Microbiology and Biochemistry, Faculty of Science and Agriculture,
University of Fort Hare, Alice Campus, South Africa
E-mail: olusesanadelabu@gmail.com

KEYWORDS Distance Learning. Information and Communication Technology. Massive Open Online Course. Online Learning

ABSTRACT By introducing Massive Open Online Courses (MOOCs), online learning has taken another dimension. It has also become a significant teaching and learning resource base. This study aimed at investigating the use of MOOCs in rural and marginalized areas. A quantitative approach was adopted by using a self-structured questionnaire for this study to gather information from the respondents and to access the awareness and the use of Massive Open Online Course (MOOCs) in Alice community, Eastern Cape, South Africa. Data collected and gathered were analyzed with the Statistical Package for Social Sciences (SPSS). The study revealed amongst others the efficacy of MOOCs in fostering teaching and learning in rural and marginalized areas. This research concludes that MOOCs are a veritable medium for everyone who wishes to obtain a degree or certification. The study, therefore, recommends that people in rural and marginalized areas should fully embrace MOOCs platforms, and also, awareness programs about its benefits should be circulated across the municipalities nationwide.

INTRODUCTION

Digital content became widely recognized in the early 1990s (Lane and McAndrew 2010; Pinfield 2017). The ease of access to a resource using the digital platform has led to a wide application of components of digital content such as distance learning, online learning, electronic learning, and open educational resources (Kay et al. 2013). Distance learning in particular has evolved from the use of postal service to the use of modern-day communication devices (Liyanagunawardena et al. 2013; Snow and Coker 2020). This has simultaneously grown the adoption of open educational resources (OER). This has added to some of the major resource bases for scholars and teachers (Liyanagunawardena et al. 2013). Also, online learning has ushered in MOOC which has steered the quality of education delivery globally (Zheng et al. 2018).

In specific terms, MOOC offers the privilege of web-based opened-access participatory learning (Pireva et al. 2015). It has enabled the engagement of unlimited and geographically diverse scholars from the comfort of their communication device (Moore et al. 2011; Kennedy 2014). As a result, MOOC has engineered the revolution for global development (Garrido et al. 2016). Beyond use in institutions of learning, it is now widely employed in commerce, media as well as in politics due to its wide communication instincts (Iwamoto 2014; Jones 2014; Kovanovic et al. 2015).

MOOCs are generally talked about over a scope of media, including the web, journals, and the authority and prominent press, also "thinly disguised promotional material by commercial interests and articles by practitioners whose perspective is their MOOC courses" as indicated by Daniel (2012). To numerous individuals, it appeared self evident that MOOCs would evacuate hitches identified with topography, financial status, reasonableness, education accomplishment, and gender.

In describing MOOCs participants geographic distribution Zhenghao et al. (2015) state that in North America and Europe, a large number of people use Massive Open Online Course (MOOCs) unlike in South America, Asia, and Africa where the rate of people that make use of MOOCs are described to be low or few in number and also usage shows that it only profited males than females in the developed nations.

However, MOOCs' participation and research in Africa countries especially in rural and marginalized areas are still in its infancy. Derived research on Massive Open Online Course (MOOCs) usage in developing countries is not common (Garrido et al. 2016). This shows that not many individuals in the creating scene than anticipated are partaking in MOOCs and their reasons for not partaking in it is unknown.

Research of about 29 MOOC students by Milligan et al. (2013), posited that confidence, experience, and motivation are area unit necessary determinants of engagement during MOOC. They further discovered that some students were disappointed and not satisfied with the MOOCs because they failed to see the inherent value of learning through the network (Milligan et al. 2013).

MOOCs courses have been in English so far, until recently, the University of Tokyo introduced courses in other essential non-English languages in encouraging spots, MOOCs are probably going to be offered in different language later on in the future (Taneja and Goel 2014; Mehran 2019). Courses that are offered in a different language as of 2013 were five which include: English, Chinese, Italian, French, and Spanish (Taneja and Goel 2014). Therefore, this study inquires about the awareness and usage of MOOCs in a rural and marginalized area using Alice community, Eastern Cape, South Africa as a case study.

Objectives

The main objective of this research is to evaluate the awareness and usage of Massive Open Online Course (MOOCs) in Alice community, Eastern Cape, South Africa, and this objective will be accomplished with the following sub-objectives:

- To find out if residents in Alice use MOOCs
- To know what they use MOOCs for
- To know how often they make use of MOOCs
- To know if the use of MOOCs has helped them in any way.

Research Questions

- This research is being guided by the following research questions:
- Do residents of Alice use MOOCs?
- What do they use MMOCS for?
- How often has been the usage of MOOCs?
- Do the usage of MOOCs of any help to them?

MATERIAL AND METHODS

Research Design

A quantitative approach was adopted by using a self-structured questionnaire for this study to gather information from the respondents and to access the awareness and the use of Massive Open Online Course (MOOCs) in Alice community, Eastern Cape, South Africa.

Research Location

This research used Alice community in the eastern part of South Africa as a case study, the sample size consists of 100 participants who were randomly selected, both undergraduates and postgraduates, including some employed and unemployed people around Alice community to get the most level of confidence.

Data Collection

Data Collection Instrument

A self-administered questionnaire was adopted to evoke information from the respondents on how they acknowledge and view MOOCs as regard to promoting education. The questionnaires that were used was in two segments (segment A and B). A segment aimed at gathering respondent's data like as age, education degree, income, marital status, and gender and if they were computer literate and also if they had heard about any online learning. All the information from the respondents was collected. Section B is geared toward the decisive and perspective of respondents on an online course. Questions evaluating knowledge about online experience, how often and helpful the online course was, were included. Instruction guidelines were also included in the questionnaires for the respondents on how appropriate answer will be chosen.

Data Collection Procedure

Questionnaires were disseminated in-person to be completed by the residence of Alice com-

munity. Over three weeks, the data were gathered, a number of the respondents were undergraduate and Post-graduate students of the University of Fort Hare, whereas others were unemployed/employees and employers' residents within the Community.

Data Analysis

The data collected from the questionnaire was prepared for analysis by coding it which was done by assigning numbers to categories of answers. For example, 1 was used to represent all the answers that said yes and 2 to represent all the answers that said no. Graphs and charts were also used to assist the researchers in generating data into meaningful statistics. Description of the analyzed data was done to articulate explanations of the data gathered**.** The Statistical Package for Social Sciences (SPSS) program was used as a statistical tool to analyze the retrieved data from the respondents.

Data Analysed

The study focuses on 100 respondents ranging from undergraduate to postgraduate, employed and unemployed, on who, how often, and how massive Open Online Course has helped them. Information about the respondents such as age, gender, marital status, and computer literate was captured in tables.

RESULTS

The result of the data analyzed was presented and this is done to go in line with the research objectives.

Table 1 indicates that almost half of the respondents (46.0%) were in the age group of 21-30 years; 34 percent were of age less than 20 years; 14 percent were of age 31-40 years and only 6 percent were of age 41-50 years. It also indicates that more than half of the respondents were female (52.0%) and the rest of them were male (48.0%). This shows that the number of females using online courses is more than their male counterparts. There may be various reasons for the overall gender instability in online learning. It could be that more females are aiming for higher education in general, also, it may be that the kind of jobs they pursue require higher education degrees or certificates. Professions like social services, education, health professions, all these professions require continuous education to step up the profession ladder.

Marital status of the respondents in this study indicated that 80 percent of the respondents were single, and 18 percent were married. This explains that many of the respondents who use online courses are still young and single. Lack of time can be a cause of this, that is, singles have more time to participate than the married. Unlike the singles, married people are committed to other time-consuming activities like taking care of the family and so on, so this can cause married people not to be patient enough to participate in an online course.In addition, 82 percent of the respondents were students and as well unemployed while 18 percent were employed. This indicates that most of the respondents who make use of online courses are not employed with any work and are also students. The table further reveals that 72 percent of the respondents have no income, which means that they do not have any source of income. Few respondents (12.0%) were having income less than R10, 000 and respondents with income from R10,000-R29,000 and above R50,000 were respectively 6 percent. This shows that many of the respondents were students and unemployed; thereby they had no income in this respect. Some online platforms or online schools require students to pay for a course, and this can be difficult for some students who do not have any means of income but wish to participate.

Furthermore, it is seen that 86 percent of the respondents were computer literate and 14 percent were not computer literate. This shows that most of the respondents are students and literate in computer use. Also, 78 percent of the respondents were able to use online courses and 22 percent from were not using online courses. This shows how the use of MOOC is trending also in rural area.The table also shows that the medium at which respondents heard about massive open online course is through the internet, 38 percent of the respondents heard through the internet, 20 percent from school, 14 percent through a friend, and 4 percent from a newspa-

Table 1: The parameters used in the questionaire for the study

			Frequency	*Percentage*	*Valid percentage*	*Cumulative percentage*
Ages of Respondents Who Took Part in the Survey	Valid	<20 years	34	34.0	34.0	34.0
		21-30 years	46	46.0	46.0	46.0
		31-40 years	14	14.0	14.0	94.0
		41-50 years	6	6.0	6.0	100.0
Gender of Respondents	Valid	Male	48	48.0	48.0	48.0
		Female	52	52.0	52.0	100.0
Respondents' Marital Status	Valid	Single	80	80.0	81.6	81.6
		Married	18	18.0	18.4	100.0
	Missing	System	2	2.0		
Occupation of the Respondents	Valid	Student/Unemployed	82	82.0	82.0	82.0
		Employed	18	18.0	18.0	100.0
Income Level of the Respondents	Valid	No income	72	72.0	75.0	75.0
		<R10,000	12	12.0	12.5	87.5
		R10,000-R29,000	6	6.0	6.3	93.8
		>50,000	6	6.0	6.3	100.0
	Missing	System	4	4.0		
Computer Literacy of the Respondents	Valid	Yes	86	86.0	86.0	86.0
		No	14	14.0	14.0	100.0
Respondents That Participate in an Online Course	Valid	Yes	78	78.0	78.0	78.0
		No	22	22.0	22.0	100.0
Medium of Advertising a MOOC	Valid	Through a friend	14	14.0	17.9	17.9
		At School	20	20.0	25.6	43.6
		Through the internet	38	38.0	48.7	92.3
		In a News paper	4	4.0	5.1	97.4
		Others	2	2.0	2.6	100.0
	Missing	System	22	22.0		
Online Medium to Acquire Certificate	Valid	Always	4	4.0	4.3	4.3
		Very Often	6	6.0	6.4	10.6
		Fairly Often	6	6.0	6.4	17.0
		Sometimes	36	26.0	27.7	44.7
		Almost Never	4	4.0	4.3	48.9
		Never	48	48.0	51.1	100.0
	Missing	System	6	6.0		
Benefit of Online Learning in Degree/ Certification Acquisition	Valid	Very helpful	28	28.0	32.6	32.6
		Somehow helpful	34	34.0	39.5	72.1
		Somehow not helpful	2	2.0	2.3	74.4
		Not helpful	20	20.0	23.3	97.7
	Missing	System	16	16.0		
Description of Knowledge of Online Learning	Valid	Excellent	20	20.0	22.7	22.7
		Good	44	44.0	50.0	72.7
		Fair	24	24.0	27.3	100.0
	Missing	System	12	12.0		

per. In this aspect, MOOCs should be advertised more so people all over even in the rural marginalized areas will get to know about it and also what MOOC is used for and how they can benefit from it should also be included in the medium of advertising. Despite the fact that most of the respondents participate in an online course, however, 4 percent of them always visit the platform, 6 percent very often and fairly often visit the online platform, 26 percent some-

times participate, 2 percent rarely use it while 48 percent never use or participate even though they register.

From the respondents' view, the data analysed shows that Massive Open Online Course has helped almost most of the respondents, that is, 28 percent of the respondents said it is very helpful, 34 percent said its somehow helpful while 20 percent said it is not helpful and 4 percent said it is somehow not helpful. Description of knowledge of online learning is the rating of MOOCs by the respondents, most of the respondents who have participated in a MOOC, 44 percent said it is good, 10 percent said it is excellent while 12 percent said it is fair accordingly.

The core findings of data analysed from the questionnaire distributed show that 78 percent of the respondents were able to use online courses and 22 percent were not using online courses. This result to a large extent proves that people in the Alice community make use of online courses. As earlier mentioned, Alice can be classified as a rural community, and the fact that a high number of people make use of MOOC shows the ground in which MOOC is taken in the world today. What people use MOOCs for varies, some people use it to acquire their degree, some use it to acquire certification and others use it for an online master's degree.

Furthermore, from the analysed data, it shows that 4 percent of people participating or registered for MOOCs always visit the platform, 6 percent very often and fairly often visit the online platform, 26 percent sometimes participate, 2 percent rarely use it while 48 percent never use or participate even though they register. This could be a result of lack of internet facilities or maybe most of the people do not have enough orientation about how to use the Massive Open Online Course and also peoples' busy schedules can also cause the participants not to be visiting or participating in online learning. Also, the core findings of data analysed from the questionnaire distributed show that Massive Open Online Course has helped the majority of the respondents, that is, 28 percent of the respondents said it is very helpful, 34 percent said its somehow helpful while 20 percent said it is not helpful and 4 percent said it is somehow not helpful. This shows that MOOC is useful and is of help to people, that is participants that are interested in getting degrees or certifications but do not have the financial capability or time to go to a traditional classroom.

Usability Testing

This section explains the usability tests of the system. Ten participants were selected but they were all Computer Science students. The participants made use of the system after they performed the activities; they were given a questionnaire to provide their feedback on their experience when using the system.

Table 2 shows the result of the feedback the participants gave about the system. The usability test was carried out to measure the usability, efficiency, and effectiveness of the online platform.

Table 2: Usability testing result

	Learnability	*Efficiency*	*Satisfactory*	*Usable*
Strongly agree	3	5	1	0
Agree	7	5	9	10
Disagree	0	0	0	0
Strongly disagree	0	0	0	0

Using the values from Table 2, it clearly displays the variation between the usability as rated by the participants. Table 2 further shows that most of the participants agreed that the system is efficient, usable, satisfactory, and learnable. It is clear that the system is very usable and it will be useful for residents who wish to participate or register for any open online course anywhere around the world.

DISCUSSION

The findings of this research show that MOOCs are a very good medium and an advancing way of achieving or acquiring a degree or certification without stress. Before anyone could register or participate in MOOCs, the person must be computer literate and must have access to the internet (Panyajamorn et al. 2016; Walia 2020). This is in agreement with the findings of this study which shows from the analyzed data that 86 percent (Table 1) were computer literate. Also, from the result of the data analyzed, it is clear that even in a rural marginal-

ized area, people make use of MOOCs, at least 78 percent of the resident in Alice community makes use of MOOCs which indicates how trending it is in relative to Tibbles (2018), but the problem is that most of them just registered but did not visit or participate in the course probably due to inability to access the internet or lack of time. It was cleared also that MOOCs has a great impact in education for those that fully participated (that is, those that complete their course or degree) in Alice Community, according to the result analyzed, it shows that MOOCs have helped most of the participants in Alice Community to acquire a degree/certification or achieve their goals.

Also, with MOOCs impact in Alice community, there are still some challenges they are facing for them not to complete or participate at all in MOOCs. These challenges include scarcity of locally developed electronic content, bad bandwidth Internet connectivity, also, the residents have limited access to computers, or most are computer illiterate and frequent electricity blackouts is also a major challenge. In light of these challenges, for people/residents to fully participate in MOOCs, the government should fully support and make basic provisions and amenities for the participants to independently partake, manage and complete their MOOCs programs. Ahead of time, the government should make provision for the content delivery mechanism, access to computers, training, and internet should be provided for residents to participate in MOOCs especially the poor ones that find it difficult to afford a traditional classroom and also the employers/employees that are being denied because of the time factor.

CONCLUSION

It is obvious that online learning is a very good medium for busy or less privileged people to acquire a degree or certification. Although people that have the financial capability and also have time also do enroll for online courses, it all depends on the person. It has been established that MOOCs are another way of getting knowledge without seeing the teacher.

Besides, accessibility is another benefit of MOOCs in which people can have easy access to content from anywhere in the world. One can find a course online, register, and start it anywhere. The content can be accessed from any device and can be done at home, continued at work, and finished over the weekend. About the rural marginalized area, MOOCs will enable them to have contact with well-groomed professors and experts. MOOCs will also open the professor's schoolroom door that allows him/her to teach and facilitate many more learners than the classroom can accommodate.

RECOMMENDATIONS

MOOCs are emerging platforms that are gaining interest globally. For it to help people and foster learning in rural marginalized areas, participants have to be computer literate, and also there must be the accessibility to good internet facility, the people have to be orientated about the use of MOOCs, how it can be used, for what reasons it should be used and what the people would gain from the use of any of the platform of MOOCs.

It is recommended that before the MOOCs platform can be fully embraced by people in rural marginalized areas, awareness programs about its use should be done at various points and should be done through their local municipalities because they recognize the bodies.

Students in high schools should also be taught early about MOOCs and how it can be useful to them. The students should also be groomed to be a computer literate early enough so they would not have problems during registration or during taking any course.

REFERENCES

Daniel J 2012. Making sense of MOOCs: Musings in a maze of myth, paradox, and possibility. *Journal of Interactive Media in Education*, 2012(3): Art. 18.

Garrido M, Koepke L, Anderson S, Felipe Mena A, Macapagal, M, Dalvit L 2016. *The Advancing MOOCs for Development Initiative: An Examination of MOOC Usage for Professional Workforce Development Outcomes in Colombia, the Philippines, and South Africa*. United States of America: Technology and Social Change Group. University of Washington Information School.

Iwamoto T 2014. Effects of Learning Infrastructures on Businesses in Service Industries. In: *Proceedings of PICMET'14 Conference: Portland International Center for Management of Engineering and Tech-*

nology; Infrastructure and Service Integration. IEEE, Kanazawa, Japan, 27-31 July 2014, pp. 3339-3343.

Jones CR 2014. The Politics of Networked Learning in an Age of Austerity. In: *Proceedings of the 9th International Conference on Networked Learning*. Edinburgh, United Kingdom, 7 -9 April 2014.

Kay J, Reimann P, Diebold E, Kummerfeld B 2013. MOOCs: So many learners, so much potential. *IEEE Intelligent Systems*, 28(3): 70-77.

Kennedy J 2014. Characteristics of massive open online courses (MOOCs): A research review, 2009-2012. *Journal of Interactive Online Learning*, 13(1): 1-15.

Kovanovic V, Joksimovic, S, Gasevic D, Siemens G, Hatala M 2015. What public media reveals about MOOCs: A systematic analysis of news reports. *British Journal of Educational Technology*, 46(3): 510-527.

Lane A, McAndrew P 2010. Are open educational resources systematic or systemic change agents for teaching practice? *British Journal of Educational Technology*, 41(6): 952-962.

Liyanagunawardena TR, Adams AA, Williams SA 2013. MOOCs: A systematic study of the published literature 2008-2012. *The International Review of Research in Open and Distributed Learning*, 14(3): 202-227.

Mehran P 2019. Design, Development, Delivery, and Evaluation of an EGAP (English for General Academic Purposes) Blended Course for Japanese University Students. From <https://ir.library.osaka-u.ac.jp/repo/ouka/all/72605/30602_Abstract.pdf> (Retrieved on 2 February 2020).

Milligan C, Littlejohn A, Margaryan A 2013. Patterns of engagement in connectivist MOOCs. *Journal of Online Learning and Teaching*, 9(2): 149-159.

Moore JL, Dickson-Deane C, Galyen K 2011. e-Learning, online learning, and distance learning environments: Are they the same? *The Internet and Higher Education*, 14(2): 129-135.

Panyajamorn T, Kohda Y, Chongphaisal P, Supnithi T 2016. The Effectiveness and Suitability of MOOCs Hybrid Learning: A Case Study of Public Schools in Thai Rural Area. In: *11th International Conference on Knowledge, Information and Creativity Support Systems (KICSS)*. IEEE. Yogyakarta, Indonesia, 10-12 November, pp. 1-6.

Pinfield S 2017. eLib in Retrospect: A National Strategy for Digital Library Development in the 1990s. In: Digital Libraries. Routledge. From <https://nottingham-repository.worktribe.com/output/1021754> (Retrieved on 30 September 2019).

Pireva K, Imran AS, Dalipi F 2015. User behaviour analysis on LMS and MOOC. In: *2015 IEEE Conference on e-Learning, e-Management and e-Services (IC3e)*. IEEE, Melaka, Malaysia, 24-25 August. 2015, pp. 21-26.

Snow WH, Coker JK 2020. Distance Counselor Education: Past, present, future. *The Professional Counselor*, 10(1): 40-56.

Taneja S, Goel A 2014. MOOC providers and their strategies. *International Journal of Computer Science and Mobile Computing*, 3(5): 222-228.

Tibbles R 2017. *Fractional Recall: Understanding Forgetting of Mathematics Learning from Computer Assisted Instruction Data and Implications for Personalized Learning in Low Resource Contexts*. Doctoral Dissertation. USA: UC San Diego.

Walia K 2020. Sustainability and relevancy of MOOCs in present education scenario. *Studies in Indian Place Names*, 40(33): 21-23.

Zheng Q, Chen L, Burgos D 2018. *The Development of MOOCs in China*. Singapore: Springer.

Paper received for publication in April, 2020
Paper accepted for publication in June, 2020