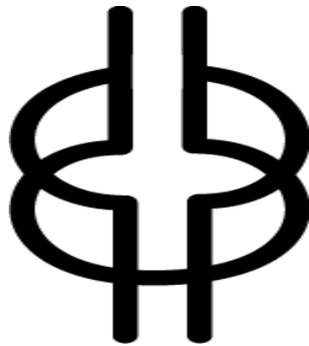


# Ghana Journal of Education: Issues and Practice (*GJE*)



NYANSAPO – "Wisdom Knot"

Symbol of wisdom, ingenuity, intelligence and patience

# **Massive Open Online Courses (MOOCs) for University Education: A Study on Students' Experiences at the University of Ghana**

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## **Abstract**

The objective of this study was to examine students' experiences in participating in MOOCs (Massive Open Online Courses) at the University of Ghana. The study employed the qualitative research method. All the 12 students of the University of Ghana's Department of Adult Education and Human Resource Studies who enrolled in a MOOC course participated in the study. The study revealed that students are mostly attracted to Coursera and edX than other available MOOC platforms. Students view MOOC as affordable, accessible and of quality. MOOC challenge mostly cited by students is intermittent internet connectivity. In anticipation of the increase in enrollment in Ghanaian Universities in 2020 and beyond due to the Free Senior High School programme of the government, the study recommended that Universities and other tertiary institutions convert some of their study courses registered by students into MOOCs to create more lecture spaces for prospective students.

**Key words:** MOOC; Education; E-learning; University of Ghana; Distance Education

## **Introduction**

In the 2018/2019 academic year, The University of Ghana turned down 45% of qualified applicants who have applied to pursue various programmes due to lack of capacity involving limited lecture space and inadequate staff (GNA, 2018). This made several parents frustrated as their wards were denied university education. To

compound this problem is the introduction of the Free Senior High School education by the government in 2017. As at October 30, 2018, 484,743 students had been enrolled in the first year of the ‘gold’ and ‘green’ tracks of the Senior High Schools (MOE, 2018). This number exceeded the number for the 2017/2018 academic year which was 358,205 (GNA, 2017). This suggests that there will be more students seeking university admission starting from 2020 as the first batch of the beneficiaries of the Free Senior High School programme graduate. As a response to the anticipated increase in enrollment at the universities, the President of Ghana in 2017, tasked all private universities to get ready to enroll more of the graduates of the Free Senior High School programme in 2020 because the public universities will not be able to absorb all (Ghanaweb, 2017). The irony of the president’s call is that most of these private universities charge higher fees ranging from \$2,000 to \$5,000 which are not affordable to a large section of the Ghanaian society (Ibid, 2017). This may have led Prof. Peter Quartey, the Director of the Institute of Statistical, Social and Economic Research (ISSER) to propose that we should start planning ahead because the numbers have doubled and the universities don’t have the capacities (Ghanaweb, 2018).

Fortunately, we live in an era where technology is advancing. A lot of countries in the world are using technology to develop. Technology has and is still playing a very significant role in education. Due to technology, a lot of schools find it easy to keep their records. Technology has also promoted easy access to learning materials, learning aid, sharing of knowledge, and revolutionised distance education (Sarkar, 2012; Budhwar, 2017). One importance of technology to education is the introduction of online courses which are aimed at giving limitless participation and open access through the web. One of such avenues is the use of MOOCs. MOOC is an acronym which stands for Massive Open Online Courses. MOOC uses instructional materials such as videos, online forums, eBooks and automated quizzes as a means of providing education to people located across the Atlantic at the same time.

MOOC places much emphasis on open access, flexibility, quality, and cost effectiveness (Baturay, 2015). MOOCs can reach out to a massive group of participants online and it allows interaction among different calibre of learners irrespective of their ages, cultures,

and nationalities (Lim, Wee, Teo & NG, 2017). MOOC is being run by several top ranked universities in the world on different MOOC platforms. Notable among these platforms are; Khan Academy, edX, Udacity, and Coursera (Baturay, 2015).

George Siemens and Stephen Downes pioneered the development of MOOC a decade ago by mounting a MOOC course titled “Connectivism and Connective Knowledge at the University of Manitoba in Canada. This course enrolled 25 tuition paying students and over 2,200 tuition free students (Parr, 2013). In the year 2011, another remarkable MOOC trial was conducted by two Stanford professors; Sebastian Thrun and Peter Norvig. These professors launched three free online courses and they were able to get an enrollment figure of about 100,000 (Shah & Pickard, 2019). Shah and Pickard (2019) further indicated that after the launch of the three courses, about 900 universities have also launched free online courses. Countries such as India, Thailand and Israel have also incorporated MOOC as part of their national educational strategy. It is estimated that at the end of 2018, about 100,000,000 students had signed up on MOOC (Ibid, 2019).

However, some researchers have raised concerns regarding MOOC. Paramount among them is the high dropout rate of MOOC participants. Yousef, Chatti, Schroeder and Wosnitza, (2014) revealed that dropout rate among MOOC participants is averaging around 95%. A possible reason for this problem is the complexity and diversity of MOOC participants. This diversity is not only related to the cultural and demographic attributes, but it also considers the diverse motives and perspectives when enrolled in MOOCs (Yousef, Chatti, Schroeder & Wosnitza, 2015).

Another limitation of MOOCs is pedagogical problems concerning assessment and feedback. Due to the large number of enrollment in a MOOC, it takes a lot of time to grade assignments manually. As a mitigating measure, many MOOCs use an automated grading system in assessing students (Suen, 2014). Gamage, Whiting, Perera and Fernando (2019) indicated that activities which are simplified for ease of assessment, such as automatically gradable quizzes, reduce learning efficiency because these mechanisms allow minimal individualisation of feedback. Grünewald, Meinel, Totschnig, and Willems (2013) have also indicated that the video section of most MOOC courses are made up of pre-recorded videos, and as such lack

interactivity between learners and instructors. In most face-to-face lecture sessions, students get the opportunity to ask the instructor questions and get prompt feedback when they do not understand some issues in the instruction. Prompt feedback facilitates learning and serves as a motivation for the students to continue assessing the instruction. In addressing these challenges, Albó, Hernández-Leo and Oliver (2015) mentioned a new form of MOOC which is known as blended MOOC (bMOOC). The essence of bMOOC is to bring together online courses offered as MOOC and traditional face-to-face study sessions in one blended learning environment. Yousef, Chatti, Schroeder and Wosnitza (2014) revealed that bMOOCs model has the potential to foster student-centered learning, provide effective assessment and feedback, support the interactive design of the video lectures, consider the different patterns of participants in the MOOC, as well as bring the benefits of face-to-face interactions into the MOOC environment.

Studies have shown that bMOOC is actually capable of increasing learning outcomes. In a pilot study conducted by Ghadiri, Qayoumi, Junn, Hsu, & Sujitparapitaya (2013) on blended learning models where an online MOOC was merged with a traditional face-to-face class of undergraduate electronic students, learning outcome was reported to have increased by 64.8% as compared to the previous year's traditional face-to-face lecture class. Similarly in a large scale study conducted to examine the use of MOOCs in fourteen campus based courses, Griffiths, Mulhern, Spies and Chingos (2014) revealed that MOOCs can be used to replace some amount of class time without harming students in terms of test score and pass rates.

Studies on MOOC in Ghana are limited. Currently, there is no study in Ghana that explores the experiences of students taking a MOOC. Fianu, Blewett, Ampong, and Ofosu (2018) explored the factors affecting MOOC usage by students in three selected Ghanaian Universities. The study showed that MOOC usage intention is influenced by computer self-efficacy, performance expectancy, and system quality.

In the 2019/2020 academic year, Prof. Yaw Oheneba-Sakyi of the University of Ghana's Department of Adult Education and Human Resource Studies enrolled 12 students in the Department on MOOC. This was done to introduce students to other educational resources to complement the face to face lecture sessions, and to introduce the

students to lifelong learning where students at any point in time after their graduation can assess MOOC to develop their capacity. This was also to serve as a test case for enrolling more students of the department on MOOC in the future. This study sought to investigate the experiences of these students in taking the MOOC in terms of quality, accessibility and affordability. The main research question that guided the study was, 'what are the experiences of the selected students' of the Department of Adult Education and Human Resource Studies, University of Ghana with regard to the quality, accessibility, and affordability of MOOC?

### **Research Methodology**

The study was conducted at the University of Ghana's Department of Adult Education and Human Resource Development. The Department runs four key programmes and these are; Youth Development, Adult Education, HIV and AIDS Management, and Distance Education and E-learning. This study was conducted among students pursuing Master of Arts in HIV and AIDS Management and Master of Arts in Distance Education and E-learning. As part of their study programme, students of the MA HIV and AIDS Management and Distance Education and E-learning were tasked to enroll in any MOOC programme of their choice that are in line with their respective study programmes. The students were asked to produce an independent report to be assessed by the Department at the end of the semester.

The total number of students enrolled for MA HIV and AIDS Management programme is six (6) while that of the MA Distance Education and E-learning is also six (6). In line with ethical principles, permissions were sought from the students, and all the twelve (12) students agreed to voluntarily participate in the study. Eight of the study participants were males while four were females.

The study employed the qualitative research method by interviewing all the twelve (12) participants of the study. The interviews were conducted at the end of the semester in December 2019. The interview questions were structured into a pre-existing framework aligned with the research objective. The overarching themes of questions included; (1) Awareness of MOOC (2) accessibility of MOOC (3) Quality of MOOC and (4) Affordability of MOOC. It is argued that researchers often get a better response by the use of interviews than other data gathering instruments because people usually

feel more comfortable talking than writing (Best & Kahn, 1998). Also, the use of interviews enables researchers to obtain detailed information even in situations where few participants are available (Shneiderman & Plaisant, 2005).

In this study, Tesch's approach (in De Vos et al, 1998) was used for data analysis. Tesch's approach involves eight steps in analyzing interview data. The eight steps as explained by De Vos et al (1998:343-344) are listed below;

1. The researcher must read through all the transcripts in order to get the sense out of the whole. In doing this, ideas must be jotted down as they evolve.
2. The researcher must select one of the transcripts (e.g. the most striking or best interview) and review. While reviewing, the researcher must be guided by this question; "what is this about?", and must think about the underlying meaning in the information. The researcher's thoughts can be written in the margins of the transcript.
3. The researcher develops a list of all topics from the transcripts and cluster similar topics
4. The researcher applies the list of themes or topics to the data. The themes or topics are abbreviated as codes, which are written next to the appropriate segments of the transcripts. The researcher tries out this preliminary organizing scheme to see whether new categories and codes emerge.
5. The researcher forms categories by grouping topics together and determining the relationships between the categories
6. The researcher makes a final decision on the abbreviation for each category and alphabetizes the codes.
7. The data material belonging to each category is assembled and a preliminary analysis is performed.
8. The researcher recodes existing material if necessary.

In addition to these steps, the researchers used pseudonyms to represent the names of the participants (e.g. EN, 2019, AM 2019, etc.)

## **Results and Discussion**

### **Awareness of MOOC**

Only two out of the twelve respondents were aware of MOOC. The remaining ten respondents were introduced to MOOC by University of Ghana. This could suggest that several Ghanaian university students are not aware of MOOC and are missing a great resource to education.

*Until Prof introduced us to MOOC, I had never heard of MOOC. I already knew there were online courses where students attend live video lecture sessions. But programmes structured with pre-recorded videos, online forums and online assessments facilitated by some world class universities like Havard were all new to me* (J, 2019).

In a similar study conducted in Nigeria on the awareness of MOOC by college students, Adebo and Ailobhio (2017) reported that only 21.4% of Nigerian students were aware of MOOC. The low awareness of MOOC is not only limited to students. Dhanani, Chavda, Patel and Tandel (2015) reported from India that only 18.52% of college instructors were aware of MOOC while a smaller percentage (12.96%) indicated they have ever enrolled on a MOOC. In analyzing the demographic data of MOOC participants, Zhenghao et al (2015) revealed that the majority of MOOC participants are from developed countries with very low participation rates from low income countries, especially Africa. Liyanagunawardena, Williams and Adams (2013) blamed this on lack of access to digital technology, linguistic and cultural barriers and poor computer skills.

### **MOOC Platforms**

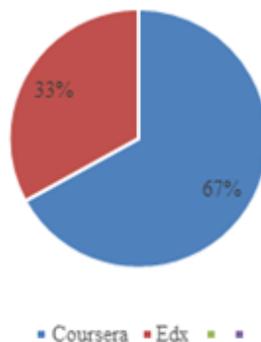
Figure 1 indicates the MOOC platform selected by the respondents of the study. Sixty seven percent (67%) of respondents selected courses from the coursera platform while 33% chose the edx platform. Some of the students explained that they chose these platforms because it provided them courses that were related to their study programme and were also of interest to them. One respondent mentioned that;

*I checked most of the platforms to look for a course of interest to me on HIV and AIDS. I found that only coursera has courses directly related to HIV and AIDS management. I chose the AIDS: Fear and Hope course offered by the University of Michigan (EN, 2019).*

Yet another respondent also revealed that:

*I have noticed that edx and coursera have more courses on their website than most of the MOOC websites. I found a course of interest to me on edx (AA, 2019).*

It is not surprising that students are attracted to coursera and edx. In ranking MOOC platforms for the year 2018 based on highest quality courses and teachers, the widest variety of available courses, and those that offer most specializations, Robson (2018) ranked coursera as first, edx as second, FutureLearn as third, Cognitive Class as fourth, iversity as fifth and Udacity as sixth. Shah (2019) reported that while Coursera had over 45 million students with 3,800 courses, edx had 24 million students with 2,640 courses. FutureLearn on the other hand had 10 million students with 880 courses. It is therefore safe to suggest that MOOC platforms with more courses and specializations are most likely to meet the needs and interests of prospective students.



**Figure 1: MOOC Platform**

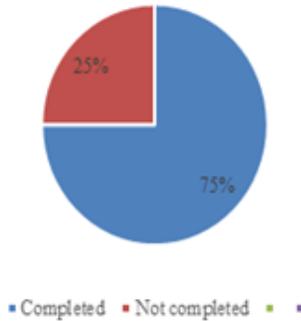
### **Completion rate**

According to Greene, Oswald, and Pomerantz (2015), most students who enrolled for a MOOC course do not complete. However, the majority of students in this study did complete. Figure 2 depicts the completion rate of respondents. Seventy-five percent (75%) of the respondents were able to complete the MOOC courses they selected. Twenty-five percent (25%) of the respondents on the other hand were still undertaking the course at the time of the interview even though the semester has ended. The data obtained from the field revealed that courses selected by the respondents have different timelines ranging from four weeks to twelve weeks. This explains why some were able to complete before others. Some respondents explained why they completed the course ahead of time in the following statement;

*I had a deadline of reporting on my MOOC course to my instructor at the University of Ghana which was earlier than the stipulated duration for completing the MOOC course online. I therefore threw myself into the course and completed ahead of time in order to meet the deadline (GA, 2019).*

*I was constantly reminded by my lecturer on the deadline to submit a report on my MOOC experience. These reminders motivated me to complete on time (AM, 2019).*

These statements by the respondents revealed that students are most likely to complete a MOOC programme when they are given a deadline from their school and are being monitored by a third party. Ahearn (2018) mentioned that most students are unmotivated to continue a MOOC when they put in more effort to complete and upload a project or an assignment, but never receive personalized feedback because of the sheer volume of submissions. In moving the completion rate from 5% to 85%, Ahearn (2018) recommended the hiring of teaching assistance or programme managers who can personally send emails to students to let them know that their assignment was received, or reminding them to submit. Khalil and Ebner (2014) also stated that trained Teaching Assistants help students who cannot complete tasks. These Assistants can answer students' questions, offer them pieces of advice if students have technical problems, post some discussion topics, monitor the discussion forum on a regular basis, and can filter out questions that need an instructor's response.



**Figure 2: MOOC completion rate**

### **Quality of MOOC**

In measuring the quality of MOOC, most scholars agree that learning outcomes should be verified from learners as to whether the MOOC course they undertook met their learning needs (Littlejohn, Hood, Milligan, & Mustain, 2016). We therefore proceeded to inquire about how satisfied the respondents are in terms of the selected courses meeting their learning needs. In this study, ten (10) of the respondents mentioned on a Likert type scale of measurement that they are very satisfied while two (2) indicated they were satisfied that their selected courses met their learning needs. None indicated they were not satisfied. This implies that most MOOC courses on Coursera and Edx are of higher quality. Below are some of the statements made by the respondents:

*...the course I took really met my learning needs. I wanted to understand how I can apply some counselling theories in counselling HIV positive people. It's interesting to say that the professor who facilitated the course was from the University of Michigan. I checked his profile on orcid and I noticed he is really a scholar in HIV issues. By the end of the course, I have come to understand more than four theories and its application in HIV and AIDS counselling (EN, 2019).*

### **Accessibility of MOOC**

Ten (10) of the respondents indicated that they are very satisfied with the accessibility of MOOC while two (2) mentioned they are

satisfied. This implies that all participants agree that MOOC courses are accessible. All the respondents indicated that MOOC is very open because they did not face any issue with regard to entry requirements. Some respondents revealed that;

*All I needed for admission was my computer and internet data. I was never asked to buy an admission form and to provide a certificate before enrollment. A few clicks on the MOOC platform and you are set to go (AM, 2019).*

*How could I have gotten access to education from Michigan University in America as I sit here in Ghana if not through MOOC? MOOC has eliminated the distance barrier to education (GO, 2019).*

Sanchez-Gordon and Luján-Mora (2016) explained that one way in which MOOC has changed the trend in modern day education is through increased access. They further mentioned that MOOC does not consider gender, status, race, wealth, the language of its users and is open to all. Hence thousands of users can get on board at the same time without hindrances. Pandita (2018) also mentioned that MOOC has the potential of offering opportunities to thousands of learners who may not get admission into the traditional universities. Adu-Marfo and Biney (2017) also re-emphasized that women who due to the many roles they play in the family as mothers, wives, as well as the many cultural beliefs that hinder their access to mainstream education in developing countries, could adopt distance education such as MOOC as their medium of education because it is very open.

However, all the participants mentioned intermittent internet connectivity as a problem that could hamper accessibility of MOOC, especially in remote places of Ghana where internet connection is not reliable. Some of the respondents mentioned that:

*A challenge I faced in the course had to do with poor internet connectivity at my home. I was able to deal with this problem by reporting to the office early around 6:30 am. With this, I could have two hours to access the MOOC course before official work begins at 8:30 am. I also leave the office around 6:00 pm. In this way, I have extra one hour to access free and fast internet in the office (SE, 2019).*

*...the internet network is not stable. Small time and the link is off. It's annoying when your interest in the course is aroused yet the network won't give you way (UJ, 2019).*

Endert (2018) made mention of how internet connection in Ghana's capital still remains fragmented and not complete; and the inadequate infrastructure in the rural areas of Ghana also posing a big challenge when it comes to internet access. Fosu (2011, as cited in Internet Policy Observatory) affirmed that Ghana is indeed one of the first countries in Sub-saharan Africa to have internet connectivity, yet people in most areas in Ghana still have the challenge of accessing the internet. They added that this is as a result of outdated infrastructure while some areas have not been connected at all.

### **Affordability of MOOC**

In this study, all the respondents indicated that MOOC is very affordable. On the average, respondents estimated a total cost of \$ 3.2 (around 20 GHS) as cost for accessing the MOOC course. However, this could be a lower estimation since all the respondents used the cost of internet bundle as their cost factor. They did not factor in the cost of devices like computers and cost of electricity. One respondent mentioned that:

*I did not pay any admission or tuition fees. In the course I chose, I have the option of paying a few dollars for a certificate after completing the course. But I did not choose the certificate (JF, 2019).*

Upon all the advancement made in education, learners do face a challenge with regard to lack of access due to financial constraints. However, MOOC has reduced this challenge by offering courses at lower financial cost and mostly free of charge (Walker, 2019). This has been made possible by the benevolence of some notable philanthropists and donors who see education as a key to development (Fain, 2012; Mangan, 2012). Some governments have also invested in MOOC to benefit the larger student population. The French Ministry of Higher Education funded and came up with a project known as France Université Numérique (FUN), which has the sole aim of helping French universities to be able to promote and come up with new innovations that will enhance teaching and learning through the use of modern-day online technology. This led to the development of FUN MOOC which is solely devoted to Francophone universities and their 93 academic partners in Belgium, Switzerland and Tunisia. FUN MOOC broadcasts 269 MOOCs in 461 MOOCs sessions for free (Shah, 2017).

## **Conclusion and recommendations**

In this paper, we report the findings of a study undertaken to investigate the experiences of selected postgraduate students at the University of Ghana with regard to the quality, accessibility, and affordability of MOOCs. As noted by Wellen (2013), the recent emergence of MOOCs has instigated another version of “disruptive” unbundling connected with the academic open content movement (p. 9). This new movement is challenging the established global educational system where many qualified students lack access due to inadequacy of space and facilities. Companies such as ‘Udacity, EDx, and Coursera have begun to provide free online access to mass-produced courses taught by leading faculty members at the world’s most prestigious universities’ (Wellen, p. 9); effectively widening access to higher education. Several components of higher education programmes are modularized to enable students learn at their own convenience. In terms of awareness about MOOCs, this paper has revealed that the majority of the participants were not aware of the existence of MOOCs. This finding is not peculiar to the participants in this study, but it could be argued that this seeming lack of awareness about MOOCs is a common trend in developing countries – where many countries are still grappling to develop their Information Communication Technology (ICT) infrastructure hence limiting access to information.

While there is no doubt that MOOCs could increase access to higher education, questions about its quality, with particular emphasis on pedagogical practices, still remain. However, the participants in this study were found to be generally satisfied with the quality of MOOCs as evidenced from among other things, the calibre of academic staff who taught the various courses. While this contradicts the findings of Margaryan, Bianco, and Littlejohn (2015) that MOOC does not fully meet the quality criteria, it is a reminder that quality judgement is a subjective exercise which takes into account the quality of teaching, online materials and their effective integration into the course, as well the quality of assessment and feedback. Therefore, quality of MOOC cannot be generalized; instead quality is course-dependent. With regard to accessibility and affordability, there was a general consensus among the participants that MOOCs offered students’ a low-cost alternative to higher education, making it accessible to all people irrespective of their personal conditions. On the back of these findings, we argue that if

50% of courses registered by students are converted to MOOC in a form of blended learning, 50% of lecture spaces could be created and this could translate into 50% additional enrollment in the institutions. Government could employ more teaching assistants who would be trained to assist instructors in assessing feedback and responding to students' queries. Government could also ensure that there is reliable internet connection in and around university environments and at the homes of students to ensure smooth access to MOOC courses. This will go a long way in mitigating the enrollment challenges.

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