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Adoption and use of new learning web technologies: Massive Open Online Courses (MOOCs)

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Abstract

The study examined the adoption and use of new learning web technologies such as Massive Open Online Courses (MOOCs). Most significantly, MOOCs build on the engagement of learners who self-organized their participation according to learning goals, prior knowledge and skills, and common interests. MOOC is an online course with the option of free and open registration, a publicly shared curriculum, and open-ended outcomes. MOOCs integrate social networking, accessible online resources, and are facilitated by leading practitioners in the field of study. The paper discussed the importance of MOOCs to learning process, roles of MOOC in facilitating learning process, MOOCs as a potential of promoting lifelong learning, challenges and benefits of MOOCs. The paper concluded that, Information Communication Technology (ICTs) has changed the way activities are being undertaking the use of MOOCs in our tertiary institutions is becoming inevitable and necessary in order to give access to multiple users of learners. The paper recommended that, it is the role of the educators, teachers and education consultants to make them aware of all the possibilities for their future carrier and all librarians and library schools should embrace the use of this novel technology to increase and promote professional development of librarians across all sector.

Keywords: *Information and communication technology, online learning, MOOCs.*

Introduction

Information and Communication Technology (ICT) have come to revolutionize the way and manners activities are being carried out or undertake. Most significantly is the use of ICT to propagate knowledge to larger audiences at different time in different arena. Today, for the purpose of teaching and learning, several technological applications have been adopted for effective teaching and learning, one of such includes MOOCs.

MOOCs are an online learning tool and have been widely used for distance learning. For the past 10 years, MOOC providers, such as edX, Coursera, and Udacity, have been offering various online courses that can be accessed by millions of learners without geographical boundaries. The Massive Open Online Courses (MOOCs) is one of ICT tools use for teaching and learning in this modern time. MOOCs is an emerging pedagogical approach use in this present day to deliver online lectures, workshop, seminars etc. MOOCs according to Fischer, 2014 cited in Razmerita, Kirchner, Hockerts, and Tan (2020) described it as Online

Learning Environments (OLE) that afford open, large-scale access to cutting edge courses that promise to reduce the cost of university education. By delivering pedagogical materials (e.g., lecture slides and video recordings) to learners worldwide regardless of geographical and/or temporal boundaries, this implies that, MOOCs do not only allow for people to have open access to education, but it also empower them (individuals) to learn independently at their own pace.

Also, Lee, Tzeng, Huang & Su (2021) describe Massive open online courses (MOOCs), an open-access educational resource available to online learners worldwide. This mode of education represents a new learning methods and provides not only various study materials and resources but also aid students in self-directed learning. More so, Duggal and Dahiya (2020) assert that, The Massive Open Online Courses (MOOCs) are the newly launched e-learning resources that are technology-based and are very much in use as a learning mode through distance education. Razmerita, Kirchner, Hockerts, and Tan (2020) concluded that it is unsurprising that MOOCs have been heralded as a disruptive innovation that could drastically transform the future of management education which has otherwise remained stagnant over the last decades.

The term MOOCs was coined by Dave Cormier and Bryan Alexander in the year 2008 for describing an online course model that was originally developed by their fellow academicians George Siemens and Stephan Downes. The basis of the course was connectivist principle where a web of connections bring out knowledge and learning to the students. It was the first MOOC course in which twenty-five students paid and enrolled at the University of Manitoba and 2300 students enrolled freely via online. The mode of interactive learning was blogs, discussion forums and online meetings (Wikipedia, 2013a).

MOOC is an online course with the option of free and open registration, a publicly shared curriculum, and open-ended outcomes. MOOCs integrate social networking, accessible online resources, and are facilitated by leading practitioners in the field of study. Most significantly, MOOCs build on the engagement of learners who self-organized their participation according to learning goals, prior knowledge and skills, and common interests.

Importance of MOOC to learning process

MOOCs is a new way of presenting online learning in this modern time. Razmerita, Kirchner, Hockerts, and Tan (2020) mentioned that collaborative learning strategies promote the feeling of connectedness, belonging, and satisfaction and are therefore critical in online environments.

MOOC are used to enhance teaching and learning of individuals for lifelong learning. MOOCs demand a higher level of self-discipline than that of traditional classroom settings and tend to favor mature audiences who already hold a first degree.

Massive Open Online Courses (MOOCs) represent an emerging pedagogical approach of delivering business education in the digital age (Whitaker, New, & Ireland, 2016). MOOCs are Online Learning Environments (OLE) that afford open, large-scale access to cutting edge courses that promise to reduce the cost of university education (Fischer, 2014).

By delivering pedagogical materials (e.g., lecture slides and video recordings) to learners worldwide regardless of geographical and/or temporal boundaries, MOOCs not only democratize access to education, but they also empower individuals to learn independently at their own pace (Jona&Naidu, 2014; Yuan & Powell, 2013). It is hence unsurprising that MOOCs have been heralded as a disruptive innovation that could drastically transform the future of management education which has otherwise remained stagnant over the last decades. MOOCs build on the engagement of learners who self-organized their participation according to learning goals, prior knowledge and skills, and common interests.

The greatest advantage of MOOCs is learners can get enrolled from anywhere across the globe and fulfil their educational needs through the e-content developed by the subject experts, educationalists and mentors. MOOCs offer a plethora of online, free of cost and technology-based courses where learners get the opportunity to learn at their pace collaborating with peers and experts from around the world. The teaching pedagogy of MOOCs primarily focuses upon interactive teaching-learning using tools like videos, audios, blogs, forums and podcasts to stimulate students' maximum engagement.

MOOCs make use of saved video tutorials and assignments for teaching online. Traditional learning formats like lectures, instructions, discussions etc. are offered online using software platforms owned by private enterprises. There are so many derivatives too like Short, Private Online Courses (SPOCs), Vocational Open Online Courses (VOOCs), Selective Open Online Courses (SOOCs) and other mobile MOOCs too. In spite of being quite different from original characteristics of original MOOCs, these variations also point out that there is a renaissance in the interest towards e-learning. It fabricates the contract bond between the content creator i.e. academic institution and the content presenter laced with technology i.e. enterprise.

MOOCs offer courses in all possible fields focusing on expanding knowledge, skills and attitudes. Nowadays they function as a part of non-formal learning, but there is a high

demand on transformation of this type of learning into a fully accepted and acknowledged element in formal education.

From the foregoing, collaboration in online courses such as MOOCs requires learners to be autonomous and self-directed with minimal guidance from the teacher (Rienties et al., 2012), and therefore, they need to be motivated to engage actively in group work and classroom activities.

Roles of MOOC in facilitating learning process

There are several roles of MOOC in facilitating learning processs. Some of these roles include:

1. Most users in African countries use MOOCs as a means to support them to gain specific job skills, prepare for future work, or as part of a professional certification.

2. MOOCs have roots in the value that knowledge should be shared freely without time, demographic, economic, or geographical constraints.

3. MOOCs serves as a means to expedite the effective creation, distribution and use of knowledge and information for learning through freely available online resources such as OER, and that they can be used to aid social networking and other forms of "connectivity" among the participants (Gupta, 2019a; Gupta, 2019b).

4. MOOCs is about the active engagement of large numbers of self-organizing learners and the connections they build amongst them using the course platform and other available social interaction tools.

5. The courses in MOOCs are free of charge, open to the public, available to any person after registering to the website or platform, finally, all courses are provided fully online. Various types of MOOCs learners can be found amid the platforms. Most of them are learners who study for professional development and continuing education.

6. MOOCs constitute a rich landscape for learning, and therefore, there are many aspects that need further investigation including theories and practice covering aspects of formal and informal learning, didactic and experiential learning, peer and master-based mentoring, and cognitive and social dimensions of learning.

7. MOOCs transcend spatial and temporal constraints and have popularized the concept of open education.

8. MOOCs integrate social networking, accessible online resources, and are facilitated by leading practitioners in the field of study. Most significantly, MOOCs build on the

engagement of learners who self-organized their participation according to learning goals, prior knowledge and skills, and common interests.

9. MOOC is an online course with the option of free and open registration, a publicly shared curriculum, and open-ended outcomes.

Based on the foregoing, it is true that the teaching pedagogy of MOOCs primarily focuses upon interactive teaching-learning using tools like videos, audios, blogs, forums and podcasts to stimulate students' maximum engagement. While MOOCs provide educational opportunities on hundreds of topics for people of all ages, they also eliminate language problem by offering courses in different languages.

Furthermore, MOOCs provide the opportunities for people with different points of view, different religions and different nationalities to receive the same education (Wiley 2006; Rodriguez 2013). If learners who speak different languages can receive the same education either in their own language or in a common language, education can become a form of negotiation.

Consequently, MOOCs can be a leading from of negotiation in education around world as they give the same opportunities to all individuals from different cultures with different habits without questioning or requiring pre-proficiencies. There is a possibility that this kind of negotiation in education can be beneficial in areas where there are educational problems or communities are divided, such as in Cyprus. The communities can solve these problems unconsciously as a result of the MOOC education that they receive.

MOOC as a potential of promoting lifelong learning

Education is continuing process in one's life, and for knowledge acquisition to take place, there is need for lifelong learning with the use of modern learning technologies such as MOOCs. Lifelong learning currently becomes an important part of our professional and personal lives. Lifelong learning is defined as "development after formal education: the continuing development of knowledge and skills that people experience after formal education and throughout their lives" (Encarta, 2008, as cited in London, 2021, online). The Council of the European Union adopted a Recommendation on key competences for lifelong learning in 2018. In the publication entitled *Key competences for lifelong learning* (European Commission, 2019), eight competences are presented:

1. Literacy competence
2. Multilingual competence
3. Mathematical competence and competence in science, technology and engineering

4. Digital competence

5. Personal, social and learning to learn competence

6. Citizenship competence

7. Entrepreneurship competence

8. Cultural awareness and expression competence

Each competence combines knowledge, skills and attitudes. It is quite essential to be able to identify what to know and what to do in each competence. However, direction towards creating positive attitudes has become equally vital, if not the most vital. It shows how psychology influences our lives through our belief in success. The aforementioned competences are to be obtained throughout attending formal and non-formal education and via experience and practice. They all are equally significant and complex in their nature; moreover they reflect our adaptability and creativity in problem-solving situations. Only high quality education and training can provide opportunities for all people, including refugees, migrants, socially excluded persons and minorities.

Unfortunately, even though states in the European Union are obliged to serve such education to all people, access to equal education is often limited by age, social class, income, religion or time. In that case, digital competence seems to be crucial in assisting to get the most out of educational process and especially online learning which makes a wider impact on acquiring knowledge, skills and attitudes among learners.

MOOCs emerged as a means of harnessing the potential of technology to transform traditional approaches to education and improve students' active learning (Hew & Cheung, 2014). MOOCs are considered an innovative form of online learning because they enable collaborative learning by encouraging learners to contribute to collective knowledge (Margaryan et al., 2015). MOOCs have revolutionized the education system by making education easily accessible to mass audiences worldwide (Shen & Kuo, 2015).ng by using modern online learning software for learning such as MOOCs.

As MOOCs open the doors and invite everyone to enter the learning space, they enhance the co-creation and co-evolution of learning content among learners with different backgrounds, experiences, skills, and knowledge. The MOOCs available via FutureLearn are structured into weeks and then into steps within each week. The recommendation is for learners to proceed according to the weeks and the logical orders of the steps, although doing so is not mandatory. Learners are encouraged to engage in discussions and to leave comments, either spontaneously or in answer to a request by educators.

Each step has a dedicated discussion forum that is organized as a social-media-like thread, which enables learners to scroll up and down to read the comments. The development of massive open online courses (MOOCs) has changed the field of higher education by rendering it more democratized and accessible (Dillahunt et al., 2014). As MOOCs open the doors and invite everyone to enter the learning space, they enhance the co-creation and co-evolution of learning content among learners with different backgrounds, experiences, skills, and knowledge (Babori et al., 2019). Connectivity is provided through an online platform, which allows for social networking. Furthermore, MOOCs generally have no prerequisites, fees, formal accreditation, or predefined mandatory level of participation.

In the age of lifelong learning, MOOCs deliver their learning content online via a combination of videos, lectures, readings, assignments, quizzes, and discussions, which means that the content is available to virtually every person in the world with no limit on attendance or class size. Yet, from a more critical perspective, MOOCs can be viewed as merely another platform for learning, albeit a more interactive one than, for example, a book.
Aside from altruistic motives, universities may also launch MOOCs with the aim of increasing their prestige and marketing themselves to potential students, faculty members, financing bodies, and donors (Hew & Cheung, 2014).

In MOOCs, learners are free to study the topic of their choice irrespective of time and place. In addition, they do not need to follow the instructor's intended course sequence (Matt, 2018). While the self-regulated learning structure of MOOCs offers considerable flexibility and a wealth of valuable resources, many learners do not complete the courses because of the pressure-free learning environment.

MOOCs use self-directed learning as their development model (Li, 2019), and thus, learners must set learning goals and use learning strategies commensurate with their aptitude and background knowledge to master the course content. Through videos, exercises, forums, and other interactive functions, learners must develop appropriate self-regulated learning. Massive Open Online Courses (MOOCs), or open public education system, are the format used to present a variety of lessons on different topics via the Internet network; thus, learners must register and then learn said lessons online via websites and web applications. MOOC content is produced primarily for teaching large groups of people, rather than specific content intended for classroom teaching that requires analysis of individual learners.

To support this, MOOCs are also presented from the specific perspective of the interaction between the student enrolled in such a course and the course materials. Although

MOOCs have the potential to become a major new mechanism for learning, they are still relatively unexplored and poorly understood

Challenges and benefits of MOOCs

Generally, every innovation usually has its strengths and weakness, as such, the Massive Open Online Courses (MOOCs) is faced with some challenges which may hindered the beauty the innovation has brought to mankind. Some of these challenges include:

1. The mediated nature of online learning is an important limitation of online courses because students may not develop "a sense of belonging" with other participants and instructors (Swan & Shih, 2005) in such an environment. Such a sense of belonging with other students could be addressed through social interactions taking place in online communities and group work.

2. Also, lack of time, previous bad experience, and inadequate background as biggest challenges (Shapiro et al., 2017).

3. Another challenge is the attitude toward MOOC and perceived behavioral control most relevant for intension to use MOOC.

4. During participation, learners may feel isolated with no help from instructors or other participants.

5. MOOCs have fundamental problems. The most well-known being the low completion rate and the lack of learning guidelines (Freitas, Morgan, & Gibson, 2015). There are varying factors attributable to low completion rates. However, studies have reported that most MOOC learners are unprepared for the extensive course content and isolated learning environment.

6. The problem of high attrition rates is a common one with regard to MOOCs (Khalil & Ebner, 2014; Sunar et al., 2016) and other online courses. Previous studies suggest that the attrition rates of MOOCs are lower when learners take part in repeated and frequent interactions so as to exchange ideas, insights, and personal experiences (Breslow et al., 2013; Coetzee et al., 2014; Sunar et al., 2016). However, limited interaction appears to be a persistent and widespread challenge in relation to MOOCs and other online courses. This is because interaction does not seem to occur voluntarily in an online environment.

7. Most MOOC learners are unprepared for the extensive course content and isolated learning environment.

8. Assessment is potentially unfair. Students cannot be monitored in realtime, and there is scope to cheat on tests.

9. Examinations do not provide clear and objective evaluations. MOOC learners are diverse, and some may have inadequate background knowledge for a course.

10. Effective learning feedback is lacking. Different learners absorb different content.

The benefits of MOOCs include:

- It leads to online interactions and relationships between participants (Wise & Cui, 2018), which in turn may create a sense of belonging to a community.

- Learners enroll in MOOCs to extend their knowledge, broaden their skills, or to get a certificate.

- Ease of use, perceived usefulness, and self-determination influence the satisfaction with the MOOC, and thus positively influence retention.

- The courses are free of charge, open to the public, available to any person after registering to the website or platform, finally, all courses are provided fully online.

- MOOCs offer courses in all possible fields focusing on expanding knowledge, skills and attitudes.

Conclusion and recommendations

In this era of Information Communication Technology (ICTs) has changed the way activities are being undertaking the use of MOOCs in our tertiary institutions is becoming inevitable and necessary in order to give access to multiple users of learners. Massive Open Online Courses (MOOCs) as a platform for non-formal learning is nowadays a highly expanding field in global educational environment. Students have many possibilities to choose and study for free, in their own free time and also the amount of courses offered to them is extremely wide. It is the role of the educators, teachers and education consultants to make them aware of all the possibilities for their future carrier.

On this, all librarians and library schools should embrace the use of this novel technology to increase and promote professional development of librarians across all sector.

References

Babori, A., Zaid, A. & Fassi, H.F. (2019). Research on MOOCs in major refereed journals: The role and place of content. *The International Review of Research in Open and Distributed Learning,* 20:3, 221-247.

Duggal, S., & Dahiya, A. (2020). Performance analysis of Indian hotels' websites on balanced score card. *International Journal of Hospitality and Tourism Systems, 10*(1), 71-86.

Gupta, V. (2019a). Talent management dimensions and its relationship with Generation Y employee's intention to quit: An Indian hotel perspective. *International Journal of Tourism Cities*. doi: 10.1108/IJTC-02-2019-0018.

Hew, K.F. & Cheung, W.S. (2014). Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. *Educational Research Review,* 12, 45-58.

Lee, C.-A., Tzeng, J.-W., Huang, N.-F., & Su, Y.-S. (2021). Prediction of Student Performance in Massive Open Online Courses Using Deep Learning System Based on Learning Behaviors. *Educational Technology & Society*, *24* (3), 130–146.

Li, Y. (2019). Estimating student ability and problem difficulty using item response theory (IRT) and trueSkill. *Information Discovery and Delivery.* Retrieved from https://doi.org/10.1108/IDD-08-2018-0030

Razmerita, L., Kirchner, K., Hockerts, K. & Tan, C. (2020). Modeling collaborative intentions and behavior in digital environments: The case of a massive open online course (MOOC). Academy of Management Learning & Education, 19 (4), 469–502.

Rodriguez, C. O. (2012). MOOCs and the AI-Stanford like courses: Two successful and distinct course formats for massive open online courses. *European Journal of Open, Distance and E-Learning,* *2.* Retrieved from http://www.eurodl.org/?p=current&article&article=516

Sunar, A.S., White, S., Abdullah, N.A. & Davis, H.C. (2016). How learners' interactions sustain engagement: A MOOC case study. *IEEE Transactions on Learning Technologies*, 10:4, 475-487.

Wikipedia. (2013a). Coursera. Retrieved from http://en.wikipedia.org/wiki/Coursera

Yuan, L., & Powell, S. (2013). MOOCs and open education: Implications for higher education: A white paper. Retrieved from http://publications.cetis.ac.uk/2013/667