Introduction to *Massive Open Online Course* (MOOC): The Issues and Challenges Using MOOC as A Teaching and Learning Method in Malaysian Polytechnic

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Abstract: The flipped classroom concept of teaching and learning is very important nowadays characterized by online education. Massive Open Online Course (MOOC) is one of the platforms that able to upgrade more systematic and entertaining teaching, and learning methods for having components such as forum space, activities, e-notes and videos. Freedom to follow the courses found in MOOC makes this platform unlimited globally. Thus, this study is carried out to give an introduction on the functions (MOOC), issues and challenges arising in developing the course using the MOOC platform for Polytechnic Malaysia. Therefore, the findings of this paper able to enlighten the uses of MOOC in assisting the Teaching and Learning (T&L) process more effectively in line with the latest technological developments. The findings of the study are expected to be a reference and suggestion to Malaysian Polytechnic instructors in using the MOOC as a teaching tool aid which is relevant to the 21st century learning with the aim of cultivating blended learning and flipped classroom through the implementation of the Technology-Enable Collaborative (TeCC) classroom.
Key words: Massive Open Online Course, teaching and learning, online learning.

INTRODUCTION

The current era of information technology has given a new approach to education field. Along with the current development of digital technology, 21st-century learners are now keener to learn new skills through the use of technology. E-learning at higher learning centers has grown rapidly in Malaysia lately. It evolves gradually from the general use of the Learning Management System (LMS) in addition to traditional teaching and learning methods until the development of other platforms such as Open Educational Resources (OER) and Open CourseWare (OCW).

In line with the launch of the Malaysia Education Blueprint (Higher Education) 2015-2025 [1], Malaysia's Higher Education Institute is recommended to propel online learning to the global level in the 9th Shifts [1]. This aims to widen educational access, improve teaching and learning quality, reduce the cost of delivering and highlighting Malaysian's Higher Education Institute in the international arena as well as foster lifelong learning especially among Malaysians and also bring Malaysian expertise to the global community. Along with this national agenda, the proposed approach in Malaysia Education Development Plan (Higher Institution) is through the offering of Massive Open Online Course (MOOC) at each institution of higher learning in Malaysia align with the National e-learning Policy (*Dasar e-pembelajaran Negara* or DePAN). It provides an efficient course delivery system, enhances higher institution education excellence in the field of thrust and expertise and makes Malaysia the hub of education.

To accommodate the growing number of student communities, there is another platform called Massive Open Online Course (MOOC). MOOC is the latest online learning method through a website that can be browsed freely around the world. [2] This statement is also supported by Wan Nurul Asyida [3] states that the learning method through MOOC is more open-ended that involves interaction between students and faculty who are connected with each other. The online learning method introduced through MOOC has made learning more fun and flexible. [4]

BACKGROUND

MOOC's development begins with an open educational resources initiative. The term MOOC was first introduced in 2008 by Dave Cormier from the

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University of Prince Edward Island and Bryan Alexender of the National Institute for Technology in Liberal Education. This is a follow up to the Connectivism and Connective Knowledge course pioneered by George Siemens from Athabasca University and Stephen Downes of the National Research Council. [2].

Implementation and the use of the MOOC in Malaysia is still at the initial stage. The MOOC Initiative was launched at the public university level in 2013 and it is initially applies to core courses at universities such as the Islamic Civilization and the Asian Civilization (TITAS), Ethnic Relations, Entrepreneurship Intentions and ICT Competencies. As of December 2014, 40,000 first-year students from 20 public universities have used MOOC as a learning platform.

While at the Malaysian Polytechnic level, a higher education institution that produces TVET graduates, the MOOC platform has been adopted since 2015 with the aim of cultivating blended learning and flipped classroom through the implementation of the Technology-Enable Collaborative (TeCC) classroom. According to Y.Bhg Prof. Dato Dr Mohd Ismail Bin Abd Aziz Director-General of Polytechnic and Community College Education Department of the Ministry of Higher Education (2018), this effort is to respond to challenges and seize opportunities as digital technology develops affecting graduates' marketability especially in the "highskills" / high pay. [4]

Through this learning approach, 30 to 80 percent of course content applies online learning whether it supports or replaces face-to-face learning. According to Prof. Dr. Mohd Ismail Bin Abd Aziz, Director-General of Political Education and Community College, Prof. Dr. Mohd Ismail Bin Abd Aziz, until now the whole Polytechnic in Malaysia has and is developing the MOOC platform as a teaching and learning support medium. In 2017, 35 MOOCs were implemented compared to 19 MOOCs in 2016. At present, 13.85 percent of students use the MOOC Polytechnic with 53 courses. The Ministry of Higher Education targets 40 percent of polytechnic students using the MOOC through the offer of 70 courses beginning 2018. [4]

Since the first MOOC was introduced, it is often debated about its significant and academic value [5]. MOOC devotees claim that this platform provides a high quality of education. Meanwhile, MOOC opponents consider it to be damaging to the higher education system including in research and accreditation. There are also questions about the way students learn through the MOOC platform to facilitate deep understanding and meaningful learning. Clearly,

the implementation and use of MOOC in Malaysian Polytechnic is still at its initial stages. In this paper, it will look in terms of MOOC definition, MOOC course types, development criteria and components in the preparation of the MOOC course and its related issues at the Malaysian Polytechnic level.

LITERATURE REVIEW ABOUT MOOC

There are many researchers around the world studying the advantages and disadvantages of using MOOC in Teaching and Learning (R & D) processes.

Table 1: MOOC related studies

No.	Researcher	Findings
1.	Yu and Powell [8]	The MOOC covers a wide range of course content and allows students to be free to choose the courses they are interested in online and the findings find MOOC able to improve their skills in solving problems.
2.	Lin, Ling and Hung [9]	The study found that through platform attributes of rich course contents, real-time discussion platform, video instruction and qualifications, learners were able to, benefit from the learning consequences of enhanced understanding of knowledge, facilitation of learning exchanges and interactions, ease of time management and improve competitiveness, thereby delivering the terminal values of fun and enjoyment of life, self-fulfillment and sense of achievement.
3.	Michael [10]	Within MOOC it contents a variety of courses offered by lecturers through recording, reference book and activities whereby it allows student to learn at their own time as this platform is tangible from its beginning until the end, and it involves two ways interaction between students and lecturers.

4.	Mustahak [11]	The concept provided by MOOC certainly worth learning tools and contented the learners as it comes with fascinating structures for instance "karma point" where the users may retrieve any good feedback from their friends and groups.
5.	Zhu [12]	During MOOCs learning period, students obviously felt the differences and uniqueness of the MOOCs teaching in the learning and experience process. Student were able to identify their own learning level, interests, as well as find out and make a preliminarily judgment of the advantages, problems and solve countermeasures of learning MOOCs in accordance with their own characteristics. It was found that qualities and abilities of autonomous learning, confidence, adaptability, vision, English level, cooperative and innovative spirit were improved.

Various studies have shown the MOOC offers a learning tool that delivers virtual nature for learners and educators and as a reference material in flipped classroom. The method developed by concentrating on course offered by educators towards the need of 21st century learners. MOOC's platform attribute comes with plenty of useful components that could cater the learning session wherever and whenever. As it is globally open usage and free, therefore provided recorded video instruction or interaction and forum for group discussion. For example educators and learners are beneficial to retrieve any information directly beyond the boundaries. In order to make effective teaching and learning through MOOCs, educator should realize the similarities and differences between online and traditional learning. The similarities are:

- Both online learning and traditional learning require a great amount of work.
- Giving and receiving feedback is important in both environments.

- Assignments are a huge part of the learning experience.
- The challenges and rewards are the same in each environment.
- Both require students to manage their time wisely.
- "While some studies show online students slightly outperforming their traditional classroom counterparts, most indicate that there is little difference in overall performance between the two formats, according to the American Sociology Association".

Differences between online learning and traditional learning environments are:

- Online learning includes both synchronous and asynchronous learning.
- Online learning requires more self-direction and discipline in order to get coursework completed on time.
- Online feedback can be slower than face-to-face feedback found in the traditional classroom.
- Equal footing stands for all students in online learning environment compare to traditional approach where the understanding can be seen clearly. All students stand on equal footing in an online learning environment as opposed to those that are in a traditional learning environment. The student that raises their hand first or talks the loudest may be at more of an advantage that the others in the traditional classroom.
- In an online learning environment everyone is equal as there are not any face-to-face interactions that would give another more vocal student the advantage.
- Networking and social interactions are different in an online learning environment than in a traditional learning environment.

These ideas suggested that we should be looking on the definition types of MOOCs, the criteria of developing MOOCs and the issues faced by educator in Polytechnic.

DEFINITION MOOC

According to Blackmon and Major [2] the definition of Massive Open Online Course or its abbreviation known as MOOC is a massively open online course accessible to anyone.

Thus, MOOCs are courses designed for large numbers of participants that can be accesses by anyone anywhere as long as they have an internet connection, are open to everyone without entry qualifications and offer a full or complete course experience online for free. [2]

This learning method requires interesting components to make an effective impact on student learning and the teaching of the instructor. In fact, pedagogical teaching and learning (T & L) techniques have changed where instructors only need to monitor the learning process of students from time to time.

TYPES OF COURSE

To strengthen MOOC's development, the Department of Polytechnic and Community College, Education Ministry of Malaysia has developed a guideline as a reference in developing and standardizing MOOC's development in Polytechnic Malaysia as well as assisting instructors to provide effective delivery. Center for E-learning and Teaching (CELT) acts as a secretariat to ensure that the MOOC developed complies with these guidelines.

There are three categories of MOOC development [6]. The types of courses offered for the MOOC platform are as follows: -

a. General course.
Public courses are common courses offered in all Malaysian Polytechnics. In this category selected courses such as Malaysian Studies, English, Entrepreneurship and others.

b. Course of Niche
It refers to the Niche of Malaysia Polytechnic which was developed based on niche studies and became the Key Performance Indicator (KPI) of the Department in Polytechnic Malaysia.

c. Skills Courses
Skills courses are courses for professional development and self-improvement skills. Examples of skills courses are Arabic Language Courses, Time Management Courses and others.

MOOC CRITERIA

MOOC's development needs a neat plan. On average, a MOOC course lasts between a minimum of 6 weeks and a maximum of 14 weeks and the course is usually based on at least three (3) Course Outcomes. (Course Learning Objective-CLO). The following is a criterion for MOOC platform development in detail.

Table 2: MOOC definition of dimension diversification criteria

		MOOC CRITERIA
M	**Massive**	An online course designed for larger number of participants. .[2]
O	**Open**	Course can be accessed by anyone with internet access [2]
		Open as in freedom of place, pace and time. [2]
		Open to everyone without entry qualifications.
		Course can be completed for free.
O	**Online**	Complete course online [2]
C	**Course**	Unit of study. [2]
		The course offers a full course experience including 1. Educational content. 2. Educator interaction among students. 3. Activities/ tasks, tests including feedback. 4. Some kind of (non formal) recognition options.

2. COMPONENTS IN MOOC

There have four (4) main perspectives in MOOC. As we know, MOOC is the online educational platform that provides course materials to learners by using a variety of method. [13] It offers online courses by an experience lecturer from Malaysian polytechnics without any fees to register.
Online users for MOOC can be asses by all students around the world especially polytechnic students.

Providers are also known as instructors. In Polytechnic, the instructor is the course lecturer itself.

Table 3: Learning method in MOOC

1.	Video	Visual material such as video is a basic way on how to engage with the student itself. Video give flexibility to participants and allow scalability for MOOC providers in delivering course content. [13] It should have one [13] introductory video within 3 minutes. The introduction video should be interesting and course instructors/providers explain the course and its purposes. Other than that, the MOOC must have Six (6) video, which are three (3) self-produced, and another

		three (3) readily available online courses such as from YouTube. The self-produced video should be within 5 minutes, MOOC should rely less on text as a manner delivering knowledge to students because of the easily available video technology and other forms of interactive content that can be embedded into courses. [14]
2.	Activities	MOOC should have three to seven activities for example Quiz, Assignment and Case Study.
3.	E-Notes	The minimum of five (5) to seven (7) e-Notes probably in PDF or slide share that can be accessed by student at anytime they want.
4.	Final Assessment	Each MOOC should have one final test probably in multiple choice question or open-ended question in order to evaluate the student understanding of the entire courses. The course instructor can assess the student at any time once they have completed the course.
5.	Other Activities / Content	A feedback page or column must be provided by the providers. MOOC forum have been proven to be a good environment for peer assistance, in which student tend to answer each other's questions without instructor intervention [14]. It indicates that participant engagement in forum has a bigger impact on the probability of MOOC completion compared to the contribution of video watch. [15]
6.	Language	English Language is used as a medium in giving instructions in most of the courses as well as other courses conducted in Malay. [15]

Fig 1 Introductory video on MOOC

Fig 2 MOOC activities

ISSUES RELATING MOOC

The MOOC platform provides a huge opportunity for internet users to explore new knowledge without having to go through the usual conventional methods. MOOC is able to provide flexibility to students to acquire a variety of knowledge. [16] In addition the platform also provides students with the opportunity to interact with their peers who have similar interests. Although the MOOC platform has many benefits, there are several issues, challenges or obstacles that must be addressed to ensure smooth and effective execution. There are various issues and challenges faced by MOOC course developers as well as educational institutions in implementing teaching and learning through this platform.

(i) MOOC User

MOOC users refer to are those who are interested in any course and registered as a member for the course. Main problem faced by the MOOC is high rate of users dropout. A study found that, the 100% completion of MOOC courses show as low as 7%. [17]. In this study, the level of student engagement began to decline after the first week of registration as a participant. According to Kopp & Lackner, [18] this may be due to low levels of interaction. Additionally, MOOC users feel it is not important to complete the whole learning, typically they use MOOC aiming to obtain certain information needed only. [19] Free MOOC platforms make users just simply try the course without having the interest and committed in completing the courses. In the study Team [20], the

MOOC course completion rate is quite high when the offered courses are charged. This is because they really value the money they spend.

Additionally, MOOC providers should also take into account the extent of the difference between their students' motivation and experience. Overall, the effort lies with the students themselves to determine the appropriate learning style for them. Failing to engage actively probably makes the student to fail. Unexperience and unexcellent students may have difficulties in using MOOC. However, the excellent students also facing the same problem if that could not manage their time in using MOOC. According to Watted and Barak [21] the use of the MOOC depends on the student itself. If it is not properly managed, students are likely to drop out. Students who are without basic competence probably can be dropped-out although the well-designed platform is being developed. Less structured courses also have the probability of dropped-out by high efficient students. The use of MOOC as a platform for independent learning requires a high level of discipline. In most MOOC courses there is no facilitator that oversees full-time course members. This causes the course member or user to have very low motivation to continue learning through materials provided online. Whereas for courses fully monitored by the instructor, users will have a high motivation to continue learning as they are structured.

The MOOC platform can provide everyone with the opportunity to access scholarly materials online, but nowadays they can earn a degree through this method. The question is whether graduates who are issued have the same quality compared to those who are undergoing learning through conventional methods in the classroom and physically meet with their instructor.

(ii) Infrastructure and Info structure

Infrastructure and info structure refers to information communication technology such as computers and the internet, mobile phones and other non-way communication tools, networks, broadband and special digital tools. Infrastructure and info structure are the basic requirements of higher education institutions for the purpose of implementing online learning services, particularly MOOC. This platform is in great need of high quality infrastructure and info structure.

As is known MOOC platform is open and accessible to everyone virtually through the Internet network anytime and anywhere. In order to effectively implement this MOOC, educational institutions such as polytechnics need to meet some of the major infrastructural and info structure needs. The server must be able to accommodate large users. This is because the MOOC platform uses a lot of digital video and learning materials. Duration of video inserted must be between 5-10 minutes. Therefore, training for media production for lecturers is a key factor in controlling the quality of the resulting material [22].

Slow internet connectivity is the most common issue faced by higher education institute, and it goes as well as for the politechnics in Malaysia. Slow speed connection makes materials could not been downloaded easily especially video materials. For students with low broadband internet connection, the lecture slide will be an alternative to the video. In conclusion, students need good internet access to download material and then share with friends.

(iii) Professional Development

Professional quality development is required by the MOOC instructor to ensure successful delivery of the course [23]. Instructors or lecturers in polytechnics should be trained enough to design online courses so they can use the MOOC effectively. Not all trainers have the skills to produce this material. According to Seaman [24] found that some instructors believe that online teaching takes more time and resources compared to the usual methods. Therefore, the complete training for instructors should be provided by the institution. Teachers should be equipped with the latest knowledge and skills using technology tools to produce teaching and learning aids. There are many reasons why teachers are slow to adapt to new technologies. In general, the reasons given may be lack of institutional support, lack of financial assistance, lack of time, and lack of basic technology skills [25]. Without exposure and new technology training like MOOC, instructors will lag behind in integrating traditional teaching methods with MOOC.

To develop MOOC content, instructors should have institutional support facilities such as technical experts that can help to build course materials. Among the materials that require technical expertise are the video production (which provides information and capable of attracting students today) and other innovative teaching and learning materials. Dedicated video production units need to be realized to help teachers. Hence, institutional support is crucial in supporting instructors to produce a quality MOOC platform.

MOOC culture in institutions like polytechnics is also very important. More proactive measures are needed for future planning by strengthening institutional staff awareness of open learning, especially MOOC. Before the MOOC platform is built, instructors must be sent through MOOC platform construction workshops.

Course participants need to be fully exposed before, during and after the creation of a platform of courses so that the resulting platforms will have an impact on teaching and learning, thus generating quality human capital for the country.

CONCLUSION

Massive Open Online Course (MOOC) has offered 'at the fingertips' platform and it is easy for instructors who want to use flipped classroom methods to replace teaching and learning time in the classroom. The current era of online education such as E-learning and M-Learning practiced among lecturers or students themselves. Easy access through MOOC can nurture students' interest in discussing, interacting and learning online wherever they are. This is because the youth's obsession with gadget technology in particular. The time constraints faced by lecturers and class skipping problems by students are no longer a trivial issue that extended without a solution.

Producing expertise in MOOC's among instructors at Malaysian Polytechnic should be reviewed and the educators training should be implemented in order to produce quality of courses within the MOOC platform. In ensuring MOOC globally applied at not only Polytechnic Malaysia, infrastructure and infostructure in particular, need to enhanced and revised in stages throughout polytechnics in Malaysia.

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