

# MOOCs as a Means to Provide Education Equity in Indonesia: An Empirical Study at a Private University of Yogyakarta

Sulistiowati<sup>1</sup> Intio Saputeri<sup>2</sup> Eko Purwanti<sup>3,\*</sup>

<sup>1,2,3</sup>*English Language Education Department, Faculty of Language Education, Universitas Muhammadiyah Yogyakarta, Indonesia, 55183*

*\*Corresponding author. Email: ekopurwanti@umy.ac.id*

## ABSTRACT

Lack of education equity, especially in higher education level, has become one of the problems which can hinder the development of qualified human resources in Indonesia. Many students cannot pursue their study to higher levels upon accomplishment of their high schools due to several reasons. In responding to such phenomenon, Indonesian government must provide education in tertiary levels which is affordable, flexible, accessible, and open for all citizens. Furthermore, innovation in education is needed to enhance students' learning quality using informational technology such as internet so that learning is not limited to classroom and time. In this context, Massive Open Online Courses or MOOCs offered by universities are potential to become an alternative solution to provide education equity in Indonesia. This study aims to find out the MOOCs production done by Universitas Muhammadiyah Yogyakarta (UMY) as a means to provide education equity in Indonesia. This study employed a descriptive qualitative research design using in-depth interviews and document analyses to collect the data. Four lecturers from UMY were interviewed, and the Rector's decree and Online Learning Roadmap of UMY were analyzed. The findings show MOOCs as an alternative way to provide education equity in Indonesia which has positive prospects in the future because it is effective and flexible, innovative and open, as well as less costly, so that most of the citizen can join the MOOCs offered by Indonesian higher education. This way, MOOCs becomes an alternative choice for high school graduates to continue their study, and UMY as one of the universities which produce MOOCs has contributed positively to the education equity in Indonesia.

**Keywords:** *MOOCs, education equity, innovative, open, effective, flexible, less costly*

## 1. INTRODUCTION

Human resources become main aspects of national development. Therefore, the quality of human resources needs to be improved in order to able to provide high competitiveness so that Indonesia can develop sustainably and become a high-middle-income country. Education is one of the keys to realize it. Unfortunately, education quality in Indonesia is still poor until now. Based on Program for International Student Assessment (PISA) in 2018, education in Indonesia was ranked to 72 out of 79 countries surveyed. Besides, Indonesian citizens who continue their study to higher education level is still very low. In education statistics, the level of Indonesian citizens who continue their higher education is only around 9%, *Badan Pusat Statistika* [1].

Due to several reasons, *Badan Perencana Pembangunan Nasional* reported in document of *Rancangan Awal Pembangunan Jangka Menengah*

*Nasional* (RPJMN) [2], education equity in higher level is still imbalance and the main reason of it is the financial constraints. Economic issues are still distinguished from people' educational attainment. People who have high economic level can complete their higher education level. On the other hand, people who has low economic level prefer to work rather than continuing their education to a higher level. Another reason is geographical issues. *Susenas* [3] reported that development of human resources is only focused on certain areas, particularly in big cities on Java while the other areas still have low education quality. Higher education quantity indicated by national number of students is still not equal compared to the citizens' age on higher education level. In responding to such phenomenon, a solution is needed to solve these problems.

Utilizing the developments of information and communication technology in education enables people to provide learning process which are not limited to classroom and time. In this context, expansion of education services

become the priority and education equity issue can be overcome. According to Lahinta [4], the support of information technology is expected to be an innovation in education by involving many components. It provides efficiency, speed of delivery of information, global reach, lower costs and flexible in its use. So utilizing the technology in education can make learning activities more effective, efficient, interactive, and affordable. Moreover, the use of technology can overcome education equity especially in Indonesia.

The use of ICT in education is potential to improve education quality and equity in Indonesia. Based on Internet World Stats [5], internet users in Indonesia have been growing rapidly in quarter of 2020, reaching 171.3 million internet users in which Indonesia is the 4th largest internet user in the world. Based on the data, it can be a prospect to use technology in education in Indonesia particularly in implementation of distance learning systems. MOOCs is an educational platform that utilize ICT in higher education level, and it provides courses that everyone can access massively and open by internet connection. Moreover, the cost is cheap even though education quality offered by MOOCs is relatively high. The students who join it will get a certificate of learning result.

The trend of learning using online platform such as MOOCs is also implemented in a private university in Yogyakarta. This new platform of learning is prospective and provide a lot of opportunities for students to take courses with minimum budget, and thus leads to education equity. In order to find out more about the implementation of MOOCs in this university, this study was conducted, particularly focusing on these two research questions 1) how can MOOCs provide education equity in Indonesia? and 2) how is the university preparation for MOOCs?

## **2. LITERATURE REVIEW**

### **2.1. Education in Indonesia**

Development in the field of education has been agreed upon by world leaders as outlined in the Sustainable Development Goals (SDGs) to be precise in goals of number 4 to ensure the quality of education that is inclusive and equitable. Besides, the goals are to increase lifelong learning opportunities for all citizen. In Indonesia all citizen are required to follow the compulsory basic education program for 12 years which are 6 years in elementary school, 3 years in junior high school and 3 years in senior high school. In Law Number 23 Year 2014 Article 12, it is stated that education is included in Government Affairs related to Basic Services. Education in Indonesia is divided into three such formal, non-formal, and informal. Education in Indonesia is also divided into four levels namely early childhood, elementary, middle, and high.

The direction of Indonesia's education development is explained in the document of *Rancangan Awal*

*Pembangunan Jangka Menengah Nasional (RPJMN)* [6]. The main focus in the development of education until now is still on improving the quality and equity of education. The challenges in education development are accelerating the improvement of the education level of all people in obtaining quality basic education services, and increasing access to education at the secondary and tertiary levels of education; lowered gaps in educational participation among socio-economic groups, regions, genders and enhance lifelong learning.

### **2.2. Educational Problem in Indonesia**

Indonesia is one of the countries with the largest archipelago in the world with the 4th largest population in the world. The main focus in education development is still on improving the quality and equity of education. As quoted in *RPJMN* [6] that the challenge in education development is to accelerate and increase the education level of all people such as obtaining quality basic education services, increase access to education at the secondary and tertiary levels of education, reduce the gap in educational participation between socio-economic groups, regions, gender; and enhancing lifelong learning. The gap in education due to economic factors is still a problem in higher education levels. The higher of education levels, then more expensive it will cost. The economic level of each students as an important role in determining the education of these students. In fact that education does require extra costs, especially for continuing education especially in higher education levels. The different level in education among regions is still high. Quality learning has not run optimally especially in rural area. In addition, there are also several problems faced by Indonesian education, such as the unequal accessibility of education services in every school, the limited number of teaching staff in some areas particularly in rural areas, inadequate regional infrastructure such as road infrastructure and transportation facilities that are still not fulfilled. In addition, *Restra Kementerian Pendidikan dan Budaya* [7] explained that one of the problems of education is the Improvement of Work Skills and Strengthening of Adult Education which has not been maximized. The large number of standardized course and training institutions does not guarantee an increase in the quality of education, job skills. This is due to the absence of revitalization by taking into account the efficiency and effectiveness of training, the low quality of non-formal education, especially skills courses, for the young workforce, no guarantee of standardization of educational services and skills training institutions. Unfortunately, the efforts made by the government have not been able to improve the quality of learning that fosters higher order thinking skills. Based on PISA (Program for International Student Assessment) (2018), the proportion of students in Indonesia is still low.

### **2.3. Technology in Education**

In the current era of the industrial revolution 4.0, the development of science and technology is running very rapidly. Thus, all aspects of life are related to technology, including education. According to Lahinta [4] technology, in its development, has led to changes in the structure of society, namely from an industrial society to an information society. One of the characteristics of the information society is the large number of knowledge workers based on information technology or computers, both software and hardware. Changes in the learning process caused by the use of technology can improve the quality of education. For example, a change in conventional learning methods, in which students generally tend to be more passive when receiving material in the classroom, into online or distance learning methods. Changes in existing learning methods will have an impact on improving the quality of education in Indonesia. In addition, by maximizing the use of technology in education, it can make learning more quality, effective, efficient, interactive, flexible and affordable because it can be done anytime and anywhere without limited space with cheaper costs. Moreover, the use of technology can overcome the equality of education, especially in Indonesia. Therefore, technology is very important in improving the quality of education in Indonesia.

### **2.4. MOOCs**

The use of technology in education can impact on the learning models used, for example the use of online learning that offers independence learning for students. Massive Open Online Courses (MOOCs) is a form of web-based distance learning. It becomes one educational platform that provides an online learning model. It has gained attention at higher education since the first MOOCs in 2008 and it is characterized by the idea of providing virtual educational opportunities to anyone who wants to participate [8]. Based on Blackmon and Major [9], MOOCs is relatively recent online educational platforms designed to offer free instruction to anyone who can access it. Moreover, Kjeldstad [10] stated that MOOCs is described broadly as a way that offers web-based, scalable with regard to the number of participants and it can access openly. MOOCs is an online course for large-scale interactive participation and open access through the web [11]. Thus, it covers a wide range of course content and allows students to choose the courses they are interested freely online. MOOCs is divided into two models such cMOOC model which is for connectivity and xMOOC model which is more or less the approach. MOOCs platform that is commonly used are Coursera, Udacity, edX and Canvas Network [12]. The use of MOOCs as an educational platform has benefits such it offers the equal of education, there is no limit on space and time while learning process because it is open, it is less costly to join the course, and each student can share their ideas with other students around [13].

### **2.5. Moocs as a Means to Provide Education Equity in Indonesia**

Lack of education equity has become the problem in Indonesia, especially at higher education level. Apart from several factors that influence students cannot pursue their study to higher levels, the use of conventional or traditional learning model also affects the education equity and quality in Indonesia. Based on Pangondian, Santosa and Nugroho [14], lack of conventional education are teacher-centered learning that affect the students who are unable to learn more knowledge because they are restricted to the knowledge provided by the lectures and book, it follows a rigid schedule that make students have no flexible time to study and conventional education is expensive as the school provides several facilities and fees for their instructors, etc. thus, not everyone can afford it. The innovation in education is needed to improve students' learning quality using informational technology such as internet so that learning is more flexible, effective, efficient and interactive [15]. In this context, Massive Open Online Courses or MOOCs offered by universities are potential to become an alternative solution that provides education equity in Indonesia. According to Jansen and Schuwer [16], MOOCs can reach out new students and creating flexible learning opportunities in education institution. It is because in MOOCs, the material and assignments can be done in online-based system. So learning process will more flexible and efficient as well as there is no limit place and time for student to learn.

Moreover, MOOCs is an innovation that drives many institutions to establish international collaborations [17]. It offers global learners and instructors free access to their undergraduate and postgraduate course materials through the internet, MOOCs not only provide teaching materials and educational services for mass learners, but also provide user forums to facilitate group interactions between students, professors and teaching assistants, making it easy to interact with course instructors and learner [18]. It makes the students able to share their ideas with other students from different places so they will more active on teaching and learning activities. Andone, Mihaescu, Ternauciuc and Vasiu [19] stated that MOOCs support the possibility of providing access to quality education at which only a limited number of individuals have had access till now, and it encourages open education. Therefore, using MOOCs, everyone can access it as much as they want. MOOCs also give benefits for higher education students when they take MOOCs as an interactive and innovative way of learning [20]. In addition, students can enhance their personal development and specific skills [21] using MOOCs.

In this case, students will be more attractive while having learning process in MOOCs and they can develop their skills. Besides, MOOCs has no entry requirements, no course fees and no limitations on the number of places available [22]. Thus, students do not need to pay expensive fee to continue their study, and they also do not need to go

to the campus for learning process. Providing MOOCs in higher education level is potential to solve the problem of education equity in Indonesia because it provides learning process that can access massively and open.

### 3. METHODOLOGY

This study used a qualitative approach by employing a descriptive qualitative research design using in-depth interviews and document analyses to collect the data. According to Cresswell and Cresswell [23], qualitative research is intended to analyze and recognize the significance that individuals or groups ascribe to a social or human problem. It depends mainly on the views of the study participants, explores and identifies other findings [24]. By using descriptive qualitative research, the researchers can explore deeper the understanding of the informants' perceptions. It means that the use of the design is suitable for this study because the researchers can explore more details about MOOCs production done by UMY as a means to provide education equity in Indonesia. Protocol interview was used to conduct the data from the informants. Five lecturers from UMY were chosen as informants based on the criteria such as they participated in creating MOOCs in UMY, the lectures understood about MOOCs and the use of information communication technology in education, and they have competence in the educational field. However, one participant withdrew the involvement due to her personal reason. The Rector's decree and Online Learning Roadmap of UMY were analyzed. The researcher did the interview using Ms. Teams and Whatsapp Call. The interview took around two days, in which each participant was interviewed around 20-30 minutes. After the data were collected, the next step was analyzing the data. In analyzing the data, there were several steps which were done. Those steps were transcribing the data, member checking, and coding Cohen, Manion & Morrison [25]. The pseudonyms were used to maintain their identity, and in establishing the research trustworthiness, member checking was conducted.

### 4. FINDINGS AND DISCUSSIONS

#### 4.1 Findings

Based on the interview with the participants focusing on two research questions such as 1) how can MOOCs provide education equity in Indonesia? and 2) how is the university preparation for MOOCs? several findings were revealed. The following explains the findings in detail.

#### 4.1.2 How can MOOCs provide education equity in Indonesia?

##### 4.1.2.1 MOOCs is effective and flexible

All of the participants agreed MOOCs embraced a free, self-paced learning style. In addition, they acknowledged that MOOCs enabled learners to apply their scattered time

more effectively, as an interviewed participant. One of the participants, Rosie, stated that "MOOCs allow learners to adjust their own pace and make better use of scattered time. The students can learn anywhere, anytime, and in any ways that their want. ...." Similar opinion was also mentioned by Smith when he said "MOOCs is effective because [it] provided options for learners to study during their scattered time, the students can register for this course based on their interests or personal needs". Another participant, Andrew also stated "MOOCs is a very effective education platform because current students are young people who prefer to use technology and the internet so that they are accustomed to learning online, especially in the pandemic era". Finally, Mona said that: "In terms of the material being taught, it is certainly very effective because it can be accessed at any time".

##### 4.1.2.2 MOOCs is Innovative and Open

MOOC is an education platform that has the potential for innovation in open and learner-centered access [26]. All participants agreed that MOOCs are an innovative platform in the development of online education. MOOC provides open information, quality program sourced material for students costly. MOOCs have open access that can be reached from all around the world so that students can exchange ideas and have open access to various kinds of culture and material.

The participant, Rosie, mentioned "MOOCs changes the learning from conventional to online...". She added "it is open and wide....[students from anywhere can access MOOCs learning]". Similar voice was also stated by Smith, and he said "MOOCs is more like a real-life course and becomes a real innovation in development 4.0 era. Another participant, Andrew also stated that "MOOCs provides comprehensive online courses, especially interaction and course assessments. Students are able to complete the test given without burden. The widely open access can connect people from various cities and backgrounds by using technology". Last participant, Mona, mentioned that "...so students do not need to meet face to face in class. Each student can take skills according to their wants and needs. So, this becomes an innovation in education that provides freedom in determining the skills that they have".

##### 4.1.2.3 MOOCs is less costly

According to the interviewees' opinion and analysis from the data, it was revealed that MOOCs offers educational platform which becomes an alternative for anyone to continue their studies in higher level because it is less costly.

Rose said "As I know, MOOCs offers less costly education. So, for anyone who wants to join the course, they do not to spend lots of their money to continue their higher education". Similarly, Smith stated "Learning in MOOCs is

free and the participants only pay when taking certificates. Therefore, MOOCs is more affordable for everyone". Like Rose and Smith, Andrew gave his opinions " If MOOCs compared with conventional learning in general, of course MOOCs are cheaper because most of the learning courses there are free". Finally, Mona asserted "Distance learning provided by MOOCs is less costly because the participants have not to pay a lot of money for the facilitates they used in the campus".

#### *4.1.3 How is the university preparation for MOOCs?*

Based on the result of interview and data analysis, the researchers found that UMY has made various preparations seriously for making MOOCs because MOOCs is seen as an alternative education platform that can facilitate anyone to learn more flexible, effective and efficient as well as less costly. In addition, MOOCs which currently become educational trends in distance learning can be attended by many people. Finally, MOOCs provide opportunity for the university to compete with other universities in providing good learning services to their students. The following paragraph explains several preparations done by the university.

##### *4.1.3.1 Establishing MOOCs policy*

In preparing the MOOCs production, the university has issued a policy related to distance learning (*Pembelajaran Jarak Jauh-PJJ*). This policy is contained in the rector's decree SK/ No.240/KEP-UMY/IV/2019 which regulates the university plan to have online study program (PJJ). In an attempt to support the online study program establishment, MOOCs or video learning should be produced.

##### *4.1.3.2 Establishing MOOCs taskforce*

In order to implement the policy of MOOCs production, a task force team was established. With the rector decree ST/350/A.2-VIII/V/2020, thirteen lecturers were involved. These thirteen lecturers are responsible for the MOOCs production, and they have tasks such as the followings: 1) Giving information about MOOCs grants among lecturers in UMY, 2) Doing internal meeting and consolidation among the team members, 3) giving assistances for MOOCs grantees, 4) Doing Monitoring and evaluation on MOOCs.

##### *4.1.3.3 Assigning lecturers to produce MOOCs*

The university has a strategic plan of MOOCs production by assigning lecturers to produce MOOCs. In order to accelerate its implementation, the university provided grants. It is contained in the university issues rector's decree ST/373/D2-VIII/V/2020 and ST/359/D2-VIII/V/2020 which mentioned lecturers' name and their responsibilities. Around Eighty lecturers who are currently

holding structural position such as the deans and the head of study programs, the professors, and the MOOCs teams are given the grants. These lecturers are regarded as the role models in the university. The lecturers who have completed producing at least five video learning and completing all material in the university website are eligible to get a certain amount of money as the remuneration. This way, the number of video learning in UMY increases quite significantly.

## **4.2 Discussions**

From the interview results with the participants above, it can be concluded that MOOCs is potential to support education equity in Indonesia as it is effective and flexible, it is innovative and open, and it is less costly. Therefore, MOOCs is possible to become educational platform that can improve education equity in Indonesia, particularly on higher education levels. This is in line with Adone et al [19] who stated that MOOCs support the possibility of providing access to quality education at which only a limited number of individuals have had access till now. Hence, anyone can join it with no limit number of participants. In addition, Jansen and Schuwer [16] stated that MOOCs can reach out new students and creating flexible learning opportunities in education institution. By providing MOOCs, geographical problem in Indonesia where some areas still have no qualified higher education can be solved because the learning process is not limited to classroom and time.

In terms of being less costly, MOOCs offers educational platform which becomes an alternative for anyone to continue their studies in higher level. Most of MOOCs courses are free and students can register themselves to join it. After they finished the course, they will get a certificate so that students only pay for the certificate fee. This finding corroborates Brown [22] who argued that MOOCs has no entry requirements, no course fees and no limitations on the number of places available. Thus, Indonesian citizen who have financial disadvantages can still continue their studies into higher level without thinking too much about the courses fee. As higher education in Indonesia still have expensive fee, MOOCs then can solve the problem because it offers less costly fee. Besides, MOOCs provides various alternative courses that offer skills development program for participants who join it. This is in line with Malca [21] who said that MOOCs provides students to enhance their personal development and specific skills. Therefore, the students can choose the courses related to their passions and needs. As a result, MOOCs can develop qualified human resources for the students in Indonesia.

In addition, based on research, it was revealed that UMY has made various preparations seriously for making MOOCs because MOOCs is seen as an alternative education platform that can facilitate anyone to learn more flexible, effective and efficient as well as less costly. Several programs were done by the university such as 1)

establishing a MOOCs policy, 2) establishing MOOCs task force, and 3) assigning lecturers to produce MOOCs.

MOOCs were produced to provide video learning and it will be offered to outside parties that could enrich this university programs. MOOCs that are made by this university will be accessible to all people from around the world, not only for its students. It is hoped that MOOCs will become future trends of learning in campus. In ensuring the quality of MOOCs, this university has collaborated with related supporting systems such as BSI (*Biro Sistem Informasi*), LPP (*Lembaga Pengembangan Pendidikan*), faculties, and study programs. Based on the data analysis above, it can be said that MOOCs has positive prospects in the future to overcome education equity issue in Indonesia and also this university has contributed positively to the education equity in Indonesia.

## 5. CONCLUSION AND SUGGESTION

### 5.1. Conclusion

From the result of this study we can conclude that MOOCs becomes as an alternative way to provide education equity in Indonesia which has positive prospects in the future because it is effective and flexible, it is innovative and open, and it is less costly so that most of the citizen can join the MOOCs offered by Indonesian higher education. Most of MOOCs courses are free and students can register themselves to join it. Thus, Indonesian citizen who have economic issues, they can still continue their studies into higher level with no worries about the courses fee. Hence, MOOCs can solve the problem because it offers cheap fee for the courses. Besides, MOOCs provides various courses that offer a skills development program for participants who join it. So, the students can choose the course related with their passions and needs. In consequence, MOOCs can develop qualified human resources for the students in Indonesia. Besides, this university had made optimal preparations for making MOOCs. The university want to provide an education that is more effective, efficient and accessible. This way, MOOCs becomes an alternative choice for high school graduates to continue their study, and also this university which produce MOOCs has contributed positively to the education equity in Indonesia.

### 5.2. SUGGESTION

Based on the research above, the researchers provide suggestions to several parties such as the government and participant of MOOCs. The suggestion for the Government of Indonesia is that the government must ensure the use of technology in Indonesia evenly distributed in every region. Information technology is the main aspect of the operation of MOOCs as a means of equitable education in Indonesia. If technology cannot be accessed easily, the use of MOOCs cannot be optimal. Furthermore, the suggestion for all students or the participant of MOOCs is that students should

familiarize with self-directed learning by utilizing technology facilities properly and remain consistent in learning through MOOCs.

## REFERENCES

- [1] Potret Pendidikan Statistik, BPS [Portrait of Statistics Education]. Jakarta , DC: Office of Central Bureau of Statistics (2019)
- [2] Rencana Pembangunan Jangka Menengah 2020-2024, BPPM. [Mid-Term Development Plan 2020-2024 Ministry of National Development Planning]. Jakarta, DC : Office of Badan Pembangunan Nasional, 2020
- [3] Survei Sosial Ekonomi Nasional (SUSENAS) 2019, Badan Pusat Statistika. [National Socio-Economic Survey] 2019. Jakarta , DC: Office of Central Bureau of Statistics, 2019
- [4] Lahinta, A, "Berbagai model inovasi pembelajaran dengan dukungan teknologi informasi," In *Proc. APTEKINDO ' 2020*, pp. 6(1), 9-16.
- [5] Internet World State. Top 20 countries with the highest number of internet users Q1 2020, IWS, 2020. [Online]. Available: <https://www.internetworldstats.com/top20.html>. [Accessed: August, 2020]
- [6] Rencana Pembangunan Jangka Menengah 2015-2019, BPPM. [Mid-Term Development Plan 2015-2019 Ministry of National Development Planning]. Jakarta, DC : Office of Badan Pembangunan Nasional, 2019
- [7] Renstra Kementrian Pendidikan dan Budaya, (RESTRAKEMDIKBUD) 2015-2019. Jakarta, DC : Office of Ministry of Education and Culture, 2020
- [8] M. Mallon. Moocs. *Public Services Quarterly*, 9(1), 46-53, 2013.
- [9] S. Blackmon, & C. Major, "Wherefore art thou mooc: Defining massive open online courses," *Online Learning Journal*, 21(4), 195-221, 2017. [Online]. Available: <https://www.learntechlib.org/p/183776/>. [Accessed: August, 2020]
- [10] B. Kjeldstad, "Moocs for Norway: New digital learning methods in higher education," *Portland Press Limited*, 2014. [Online]. Available: [https://portlandpress.com/DocumentLibrary/Umbrella/Wenner%20Gren/Vol%2088/PPL\\_Wenner\\_Ch13.pdf](https://portlandpress.com/DocumentLibrary/Umbrella/Wenner%20Gren/Vol%2088/PPL_Wenner_Ch13.pdf). [Accessed: August, 2020]
- [11] S.Kolukuluri,"Massive open online courses enhancement to edx-platform," M. Sthesis, Indian Institute of Technology, Bombay Mumbai, 2013
- [12] M. Gaebel, "MOOCs: Massive open online courses. EUA, 2014.

- [13] A. Aji, "Pemanfaatan massive open online courses: Orangtua sebagai pembimbing anak usia dini seni berbahasa melalui kuliah daring" In Proc. Temu Ilmiah Nasional Guru (Ting) VIII, 609-619, 2016
- [14] A. Pangondian, I. P. Santosa, & E. Nugroho, "Faktor-faktor yang mempengaruhi kesuksesan pembelajaran daring dalam revolusi industri 4.0". *Seminar Nasional Teknologi Komputer & Sains (SAINTEKS)*, 1(1), 56-60, 2019
- [15] R. Raja, and C. Nagasubramani, "Impact of modern technology in education". *Journal of Applied and Advanced Research*, 3(1), 33-35, 2018
- [16] D. Jansen, and R. Schuwer, *Institutional MOOC strategies in Europe. Status Report Based on a Mapping Survey Conducted in October-December 2014*, EADTU, 2015. [E-book] Available: [researchgate.net](http://researchgate.net).
- [17] M. Jenner, and F. Strawbridge, "Ucl's extended learning landscape," In Proc. EMOOCs 2015, the Third European MOOCs Stakeholders Summit '05, 2015, pp. 07-110.
- [18] C. Li, and H. Zhou, "Enhancing the efficiency of massive online learning by integrating intelligent analysis into moocs with an application to education of sustainability," *Sustainability*, vol. 10, no. 2, February 2018. [Online serial]. Available: <https://www.mdpi.com/2071-1050/10/2/468>. [Accessed Aug. 2, 2020].
- [19] D. Andone, V. Mihaescu, A. Ternauciuc and R. Vasiiu, "Integrating moocs in traditional higher education," In Proc. EMOOCs 2015, the Third European MOOCs Stakeholders Summit '05, 2015, pp. 71-75.
- [20] N. Roland, E. Uyttebrouck, and P. Emplit, "A new participative space for moocs: overtaking technological evolution to achieve educational innovation," In Proc. EMOOCs 2015, the Third European MOOCs Stakeholders Summit '05, 2015, pp. 18-22.
- [21] N. Malca, "Moocs in amdocs—corporate learning based on mooc's methodology," In Proc. EMOOCs 2015, the Third European MOOCs Stakeholders Summit '05, 2015, p. 37.
- [22] S. Brown, "Back to the future with moocs," In Proc. ICICTE 2013 Proceedings 2013 '03, 2013, pp. 237-246.
- [23] J. W. Creswell and J. D. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Fifth Edition*. Los Angeles: SAGE, 2018.
- [24] J. Sargeant, "Qualitative research part II: Participants, analysis, and qualitative assurance," *Journal Graduate Medical Education*, vol. 4, no. 1, March 2012. [Online serial]. Available: <https://meridian.allenpress.com/jgme/article/4/1/1/200295/Qualitative-Research-Part-II-Participants-Analysis>. [Accessed Aug. 1, 2020].
- [25] L. Cohen, L. Manion, L. and K. Morrison, *Research method in education. 7<sup>th</sup> Ed*. London: Routledge, 2011.
- [26] A. McAuley, B. Stewart, G. Siemens, & D. Cormier, "The MOOC model for digital practice", 2010. [Online]. Available: [http://www.elearnspace.org/Articles/MOOC\\_Final.pdf](http://www.elearnspace.org/Articles/MOOC_Final.pdf). [Accessed: August, 2020]