

# Effectiveness and Challenges of Massive Open Online Courses (MOOCs) Integration in Learning as Experienced by Students in the College of Education in China

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Computer as a tool in education appears to gain momentum specifically at the onset of the 21st century and to be developed by the presence of the COVID-19 pandemic. Varying levels of interest in online classroom learning methods continually grows as an essential for higher education institutions in order to meet the needs of all students. The People's Republic of China's Higher Education strives to learn about the most recent and efficient techniques through the integration of Massive Open Online Courses (MOOCs) in learning with the objective of giving students the education they deserve. Taking advantage of the chance to further improve its implementation, famous universities in China are based on five MOOCs considerations such as: MOOCs content for learners, presentation of the lesson through MOOCs, presence of the facilitators in MOOCs, promotion of active engagement in MOOCs, and infrastructure consideration. Time management, internet connectivity, language barriers, and interest in MOOCs are some of the issues and challenges. The research was descriptive-quantitative, and the researcher used Cochran's method to come up with a sample size of 338. A proportionate sample design was utilized with the colleges or institutes of instruction at the three higher education institutions in China. The results for the profile and the issue of the implementation of MOOCs were presented using frequency and percentage. Meanwhile the Mann Whitney U Test and Kruskal Wallis H Test are used to examine differences and compare between two independent groups. A post hoc test is utilized to obtain a statistically significant result and ascertain the true source of differences between variables.

*Keywords:* MOOCs integration in learning, Massive Open Online Courses (MOOCs), online learning, Polytechnic University of the Philippines, College of Education in China, Doctor in education management

## Introduction

Global adoption of technology in the teaching and learning process was sparked by the COVID-19 epidemic. This has forced the education industry to make significant changes to the "new normal" framework in order to keep up with the quick development of digital media and the technology. The pandemic's development has

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resulted in a fundamental educational reinvention that tests the framework of the present educational system. While accepting the challenges posed by the spread of technology and the COVID-19 pandemic, educational leaders' top concerns at this time focused on optimizing the resources available to ensure a healthy and productive workforce, regardless of physical location.

Every year and for every course, more students are enrolling in Massive Open Online Course (MOOC)-based online learning platforms like Coursera, edX, Udacity, MiriadaX, and IITBombayX in China. China is positioned to become a MOOC powerhouse and rethink the direction of education in the 21st century. One of the first Asian universities to join edX is Tsinghua University in China when edX announced its launch officially in 2013. The contracts with Coursera and Peking University were signed after that by Fudan University and Shanghai Jiao Tong University. The largest Chinese MOOC learning community, Guokr, released its MOOC Academy, which offers more than 1,500 courses from all the main MOOC platforms. On this platform, half a million students can review courses, exchange notes, and have discussions about them. The same year, Tsinghua University launched the "Xuetang Online" portal formally, opening up its online courses to the entire world. Then, in 2014, Xuetang Online and edX entered into a partnership to offer top-notch MOOC from prestigious colleges including Harvard, MIT, Berkeley, Stanford, and others. Nanjing University for MOOC on Coursera will become the fifth university in China to join the international MOOCs platform.

According to the history and growth of Coursera in China from 2013, Coursera had registered about 130,000 Chinese users, making it the ninth-largest platform in the world. In 2014, it had grown to 650,000 users with the addition of NetEase Cloud Classroom, which took over the Ministry of Education's national high-quality open courses and launched the "Chinese University MOOC" project in collaboration with Aicourse.com. However, a significant share of MOOC students in China is concentrated in first-tier cities and cities with advanced educational systems.

Hence, this study examined the actual objectives of organizations developing MOOCs or incorporating them into the delivery of programs, and it reviewed the most recent research and best practices to determine whether using MOOCs is effective or not. There is no denying, however, that the emergence of MOOCs has forced many Chinese educational institutions to reevaluate or reconsider their implementation techniques. This study is aimed to assess the success of MOOC implementation in the universities in the People's Republic of China by taking into account the following features: learner-focused MOOC content, lesson delivery through MOOC, facilitator participation, encouragement of active engagement through MOOC, infrastructure considerations in MOOC, and challenges encountered during implementation.

### **Literature Review**

According to studies on the effectiveness of MOOCs, this ground-breaking phenomenon in education has long been recognized and is a result of ongoing development to address difficulties brought on by technology and the global COVID-19 pandemic.

Technology integration, MOOCs, and distance learning are key features of 21st century education (L. Chen, H. N. Chen, & Wang, 2009; Jenner, 2014; Churchill, 2015). This was a significant development for the beginning of the globalization era, which was tied to the internationalization of the educational system (Dash, 2015). A few factors are being focused on access, quality, excellence, and sustainability, or otherwise known as the trends (UNESCO, 2002; Jones, 2015; Suhardiyanto, Herlina, & Hartulistiyoso, 2015; Almutairi, 2018). These factors are suitable for the nature of the current educational system, which is described as the future of education. These

factors were established through gaining online experience (Varghese, 2015), using eportfolio (Ferguson & Sharples, 2014) and other flexible and interactive web or online activities (Mora, 2013; Rollins, 2018; Bodenham, 2019; Akbulut, Diler, & Arikan, 2022) to attain high level of engagement, and practical knowledge and professional competence (Olcek, Celik, & Basoglu, 2022).

Even though there are studies that support DE, MOOC, or online learning integration (Albelbisi, Al-Adwan, & Habibi, 2022), as well as alternative methods of delivering instruction and innovation (Bralic & Divjak, 2018), they also take their positive effects into account during the spread of the COVID-19 pandemic, with the provision of borderless education from knowledge acquisition, reasonable.

Numerous educational institutions may reevaluate their implementation strategies in light of the introduction of MOOCs as studies have demonstrated the importance of content in terms of retention; the promotion of active engagement through activities; the role of facilitators; and the need for support on resources and other logs.

At the beginning of the implementation of online classes, there is still a sense of excitement and trepidation (Baykal & Tutuncu, 2022) due to challenges with enrollment (Lwin, Sungtong, & Auskornnit, 2022) and some reported average performance through MOOCs; the possibility of an expanding digital divide (Denga, Benckendorff, & Gannaway, 2018). However, the researcher shares Conjin and Cuijpers' (2018) opinion that completing a course through a MOOC or with online integration would be successful with proper design and facilitation for attitudinal change; and other risks and challenges where quality is at risk with online cheating, other plagiarism issues, and academic procrastination (Valizadeth, 2022; Bayran & Tikman, 2022); continuous encouragement to use online learning (Mahande, Akram, & Rahman, 2022); recognition of the critical role of teachers (Khan et al., 2021) in order to prepare teachers' competence (Barreto et al., 2022) through their professional development (Ugur, Kocadere, Kibar, & Bayrak, 2021) in order to gear towards sustainable learning, as a result, lessen the likelihood of the future widening of the digital divide (Rohs & Ganz, 2015). This has also aided in pursuing efficient online education, using certain online techniques (Baig, 2011; Darius, Gundabattini, & Solomon, 2021).

Regarding the current study, one of the theories used, the Commonwealth of Learning (COL), Canada's theoretical considerations in creating a MOOC at the Wawaan Open University (WOU) in 2014, defined the traits and goals that have been established as ideal for an efficient e-learning course. The WOU plan specifically mentioned the three components of infrastructure, content, and facilitation (presentation of the lessons through MOOC, presence of facilitators, and promotion of active engagements). The three elements of infrastructure, content, and facilitation—in particular, the delivery of lessons through MOOCs, the presence of facilitators, and the encouragement of active engagement—were essential for achieving the best possible learning outcomes in online learning.

In the meantime, the connectives approach has greatly aided in the adoption of MOOCs in education. "The MOOC model promotes creation, creativity, autonomy, and social networked learning, which may be read as to the notion of connectives that MOOC engages the learner more actively than MOOC with traditional methodologies". The goal of connective MOOCs is to create network effects that promote learning. Network effects are demand-side economies of scale in which the increasing use and demand of a good or service increases its value. The massiveness of MOOCs is important, so far as it offers an expanding diversity and density of potential connections among its participants, information nodes, tools, and resources, in accordance with the logic of network effects.

Since this era demands the use of technology and is characterized by the proliferation of the distance education phenomenon, the researchers have undertaken the assessment of MOOC effectiveness in learning as implemented in the College of Education students at the three universities in the People's Republic of China.

### Results and Discussion

The study was undertaken in three universities in China, namely: Hubei Engineering University, Hefei University, and Jiangxi Normal University with 2,706 population of students enrolled in the College of Education. The Cochran formula was used to calculate the sample size of 338. This formula allows the researcher to establish the appropriate sample size given a desired level of precision, a desired level of confidence, and the expected proportion of the attribute present in the population. The study design was descriptive-quantitative with proportionate sampling design. Frequency & Percentage and Mean were used to present the findings for the profile and on the question of effectiveness MOOC implementation. Kruskal Wallis H Test and Mann Whitney U Test are used to assess the significant difference of two or more groups and to compare differences between two independent groups as well.

The study focused on the following results: the profile of the respondents as to the year level, age, sex, internet connectivity used and the devices used in classes via MOOCs, while, the second part on the evaluation of MOOCs effectiveness considered the following features: MOOCs content for the learner, presentation of the lessons through MOOCs, presence of the facilitators in MOOCs, promotion of active engagement through MOOCs, and infrastructure consideration. The third part is on the problems/issues/challenges met in the course of learning through MOOC identified.

32% are mostly from the first-year level; with the largest group of 38% under the age of 21. Respondents who were female were 88% more numerous than those who were male; 208 (58%) used mobile data while 169 (46.7%) used desktop computers.

1. Effectiveness of MOOC in learning: rated using this Likert Scale of 5 (4.51-5)—Extremely Effective, 4 (3.51-4) Very Effective, 3 (2.51-3) Moderately Effective, 2 (1.51-2) Slightly Effective, 1 (1.00-1.50) Not at All Effective.

The use of presentations (slides, audio, and video, were clear and audible) seems to be very effective for MOOCs content for the learner with 3.87 mean score, while availability of notes to make students familiarized with learning environment is also very effective with a 3.82 mean score when presentation of the lesson via MOOCs is considered. Being accommodating and easily communicated is very effective when the presence of the facilitators has to be considered with the highest mean score of 3.97. It is also evident the effectiveness of the availability of schedule for a completion of certain task in the module in the promotion of active engagement via MOOCs with 3.84 mean score. Lastly, a well-designed website reduces the amount of additional cognitive burden on students by being simple to use and requiring minimal instruction as it interfaces when infrastructure has to be considered to be also very effectively been maximized by the respondents earning the highest mean score of 3.77.

2. Problems/challenges encountered in MOOC: evaluated through this Likert Scale: 5 (4.51-5)—Strongly Agree, 4 (3.51-4.50) Agree, 3 (2.51-3.50) Somewhat Agree, 2 (1.51-2.50) Disagree, 1 (1.00-1.50) Strongly Disagree.

The actual scenario in the MOOC's implementation has also identified issues or challenges among the students at the College of Education in China, which are categorized into four categories where respondents agree

on time management (3.04), but partially agree on internet connectivity (2.78), language barriers (2.64), and interest in MOOC (2.60), as these features may be issues/problems or challenges in the MOOC's implementation for learning in China.

3. On significant difference test where Kruskal-Wallis H Test and Mann Whitney U Test were particularly employed: On testing the significance difference on the effectiveness of MOOC implementation, the Kruskal-Wallis H Test found that year level, age, sex, Internet connectivity, and device used were significant factors. However, in a post-hoc analysis, the sex variable did not prove to be a significant factor on MOOC content for the learner and promotion of active engagement with computed p-values of 0.189 and 0.428, respectively. Additionally, the p-value for the device used, which was computed to be 0.095, focused in particular on the promotion of active participation through the usage of an iPad or tablet was also not significant.

There are issues/problems and challenges met in the implementation of MOOC in learning that were openly presented by the researcher to be properly addressed in this study such as: time management, Internet connection, language barriers, and Interest in the implementation of MOOC. Results show that year level, age, sex, Internet connectivity used, and the device used in online learning were all regarded significant factors confronting MOOCs integration in learning, but mostly on the issue of time management.

### **Recommendations**

Based on the conclusions drawn from the study, the following are the suggestions provided:

1. Although MOOCs have been around for a while and initially served only as a technologically enabled form of instruction, it is suggested that their introduction has really acted as a catalyst for changes in education. It is expected of an institution of higher learning to constantly seek the best ways to improve the outcomes of online learning, and MOOCs have changed over time. Just like other online platforms, MOOC has demonstrated its potential to have a significant impact on the teaching and learning process. Therefore, implementers or educators using MOOCs must make the most of presentations with available slides, video, and audible audio along with comprehensive and simple instructions; provide notes universities that students can access via asynchronous sessions; accommodate students' questions; provide universities a schedule for the completion of certain tasks or assignments; and ensure that a well-designed website is accessible.

2. In order to have adequate time for online courses, students who are interested in pursuing an online education need paying particular attention to learning effective time management skills. Whether a student uses a wired connection, wifi, or mobile data, it is suggested that the success of online learning and its implementation are highly dependent on time management because you are in charge of your own learning and pace. The remaining requirements are there to help students develop into responsible adults. As the most important aspects of taking online courses, it is advised to utilize a timetable, set an alarm one week before due dates or deadlines, and take the schedules offered in an online learning seriously.

3. Chinese universities may also think about improving and provide a well-designed infrastructure to help students easily access the learning process. Newer technology must be enhanced through continuous online training of the faculty members in higher education in China to handle MOOCs classes since its effectiveness in implementation is highly dependent on the faculty members to handle classes via online, which also implies that utilization of the most modern software has the potential to maximize the effectiveness of online learning.

4. The academic workforce in China's universities may also reexamine the use of MOOC classes in order to be mindful of the type and quantity of activities and assignments given to the students, especially taking into

account internet connectivity and the devices available to the students, and strengthening the students' communication skills in English and other languages through the improvement of the curriculum. If the budget warrants, first and second year students may receive more advanced classes via MOOC while the upper years may be considered for retraining in the use of online learning.

5. Further research may be considered along the implementation of highly sophisticated online learning platform considering the advantages and disadvantages of transforming into online learning.

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