



Capacity Building through Massive Open Online Courses (MOOCs) for Teacher Education Programmes in India

Madhuri Hooda and Karuna Bhardwaj

Maharshi Dayanand University, Rohtak 124501, Haryana, India

KEYWORDS Blended Learning. Massive Open Online Course. SWAYAM

ABSTRACT This study was carried out to find the effectiveness of MOOC's programme in blended mode for teacher education courses. The data was collected from students of Maharshi Dayanand University, Rohtak studying Masters in Education. Experimental research method was employed with True Experimental Research Design, two groups, randomized subjects, post-test only. Sample was selected based on Probability Sampling Method. The Randomized Probability Sampling Method was used and students were allotted to the control and experimental group with the help of lottery method. The experiment was conducted with two groups in which control group consists of the students who were taught with traditional lecture method only and experimental group students were taught through blended mode in which students were taught with the help of MOOC course developed by the researchers. The result of the study revealed that students who were taught with blended mode using MOOC performed better than students taught with traditional lecture method only. MOOC programmes in teacher education are effective in equipping the learners with ICT enabled teaching and results in capacity building of teachers.

INTRODUCTION

Massive open online course commonly known as MOOC is an open online course which doesn't possess any limitation on the number of students enrolled in the course and it is free to access and there is no pre-eligibility criterion for getting enrolled in the course. Oxford Dictionary defined MOOC as "A course of study made available over the Internet without charge to a very large number of people." It is mostly self-paced as it proceeds based on learners experience and will. Some courses have no time boundation, that is, individual can join them anytime but all the courses don't offer such flexibility. Most of them state the starting date of the course and may also state the end date of the course. The strength of students involved in the course however get affected with the resources available for the course. Otherwise, the access to the course is free and unrestricted. However, the participant needs some

technical knowledge about gadgets such as operating a computer or a mobile which are needed to get access to the course content but still it can't restrict enrollment to course. According to Educase, "A massive open online course (MOOC) is a model for delivering learning content online to any person who wants to take a course, with no limit on attendance." A commonly agreed definition of MOOCs is "online courses designed for large numbers of participants, accessible by anyone anywhere as long as they have an internet connection, open to everyone without entry qualification, and offer a full/complete course experience online for free" (Jansen and Schuwer 2015).

The word "blend" denotes mixing different things and styles. Blended learning is the combination of two styles of teaching and learning mostly composed of a traditional face to face method and online learning. The blended learning is also known as hybrid learning and web-based learning. In this study, the traditional face-to-face method and MOOC programme are two styles of teachings used together to teach students. Blended learning refers to the systematic and strategic approach to combine modes of learning using appropriate information and communication technology. Blended learning combines the traditional method of teaching and technology of online learning in a particular discipline.

Address for correspondence:

Karuna Bhardwaj
H.NO. 556 Ward No. 11,
Misran Mohalla, Beri Road, Sampla,
Distt. Rohtak124501,
Haryana, India

Mobile: 9802373232; 9017025664

E-mail: bhardwaj.karuna2@gmail.com;
hoodamadhuri@gmail.com

In the era of the globalised world, the competition in every field is not limited to the boundaries of state and nation but now, there is a worldwide competition. MOOC is a new trend worldwide which is evolving with great speed. The internet is becoming a huge source of information. With its help, we can also share the resources that we have with each other in the whole world. With the help of MOOC educational resources are shared at the global level which helps every learner to prepare himself for the global competition. Learner nowadays use many digital technologies like computer, mobile etc. MOOC is an initiative to use these technologies for learning purpose in a proper systematic and organized way. Armellini and Rodriguez (2016) conduct a survey for exploring “how different stakeholders describe MOOCs focusing on whether they would consider them pedagogically innovative.” The evidence suggests that caution should be exercised when characterizing MOOCs as pedagogically innovative.” The survey report of The Harvard Gazette 2014-15 reveals that educators are active MOOC participants. The study reveals that thirty-two per cent of respondents identify themselves as teacher or becoming a teacher. In the survey, reports reveal that nineteen per cent of participants are instructed on the same topic of the course which they participated. This reveals the craze and trend of MOOC among educators. Aggarwal (2016) concluded, “By offering a variety of unbundled opportunities, we can tear down the current one-size-fits-all model of college and open the doors to more determined students. I truly believe this is where residential campuses are headed with their approach and it represents the future of higher education overall.”

With the increasing trend of MOOC all over the world, India also looks forward to joining hands with the futuristic idea of MOOC. Bast (2018) wrote an article on “Learning on the go” in “The Hindu” newspaper in which he describes the government initiation for the MOOC, the online learning programme which is free and can be accessed with the help of internet, mobile or laptop. In his article, the writer described that MOOC course content can be accessed from anywhere and at anyplace. SWAYAM is the digital platform for MOOCs offered by Ministry of Human Resource Management in India. The benefits of

MOOC are its openness that anyone can enroll without any kind of entrance test. MOOC has a two way learning programme and comparing with the traditional method, how the MOOC is beneficial is mentioned in the article. The courses hosted on SWAYAM are in 4 quadrants that are video lectures, reading material that can be downloaded and printed, self-assessment and online discussion forum. It is based on 3 basic principles on Indian education policy, that is, quality, access and equality.

Objectives

The study is an initiative to evaluate the present scenario of using a MOOC in the blended mode in higher education specifically in teacher education programmes in India. The study is conducted on M.Ed. students to find the effectiveness of a MOOC programme. The objective of conducting the study was to compare the effectiveness of online teaching method (MOOC) in blended mode in the Teacher Education course at Post-graduate level over traditional lecture method and to develop MOOCs for the paper Advanced Educational Research for M.Ed. 3rd semester.

RESEARCH METHOD AND DESIGN

In the present study, two groups, randomized subjects, post-test only, True Experimental research design is employed with a randomized sample in the form of M.Ed. 3rd semester students of Maharshi Dayanand University. It involved two groups of M.Ed. students, the experimental group was taught through MOOC in blended mode and the control group was taught through the lecture method.

Research Plan

The researchers plan is divided into two stages.

1. **Developmental Phase:** Developmental phase of the research design includes the developmental process of MOOC. MOOC course is developed based on the 4 Quadrants of SWAYAM that is, E-tutorial, E-content, Assessment and Discussion Forum. It includes the steps taken for developing a free online course with the help of different software and applications such as Moodle,

Screencast-O-Matic v2.0 and Microsoft PowerPoint Presentation.

2. **Experimental Phase:** Experimental phase is the execution of the experiment. In this phase, the experiment is conducted in an actual setting or environment i.e. on the students of M.Ed. 3rd semester from July-August 2018.

Variables of the Study

Independent Variable

As the effect of MOOC in blended mode is to be studied, the method of teaching is used as an independent variable.

Dependent Variable

Achievement in the Advance Educational Research is taken as Dependent Variable. This variable is measured at the end of the experiment by a post-test as score on the achievement test.

Intervening Variable

Certain variables which may affect the independent variable, dependent variable and learning outcome are known as Intervening variable (sometimes also known as mediating variable). Nature of the department (from which sample was selected), grade level, subject taught, teacher was the Intervening variable which is controlled during the experiment.

Control Employed on Intervening Variables

Intervening variables are necessary to control as they significantly affect the dependent variable. Hence by employing suitable controls, intervening variables are controlled.

1. **Nature of Department:** The samples were selected from a single department (Department of Education) of Maharshi Dayanand University, situated in Rohtak district of Haryana.
2. **Grade Level:** Grade level was kept constant by selecting M.Ed. 3rd-semester students for the experiment.
3. **Teacher:** Teachers who taught both the groups (experimental group and control

group) were same to avoid any variation. Due to limited days of experimenting, teaching sessions were taken by two teachers. One was researcher herself and another one was the researcher's guide, Dr. Madhuri Hooda. To avoid variation unit 1 was taught by Dr. Madhuri Hooda and unit 2 was taught by the researcher herself in both the group.

4. **Subject:** Both the groups (experimental group and control group) were taught the first two units of Advance Educational Research.
5. **Duration of the Instructional Phase:** Both the groups were taught for 19 days.

Samples Selection

In this study, the probability sampling method is used. The method is also known as randomized sampling. Students of M.Ed. 3rd semester are randomly allotted to the control and experimental group with the help of lottery method. 22 students were selected in both groups.

Tools Used

To collect the data researchers used an achievement test, to measure the effectiveness of the treatment on the samples studied in the research. Due to lack of an available standardized tool that could be used in the research, the researchers developed a non-standardized tool which was constructed under the supervision of research supervisor. The researchers constructed achievement test for M.Ed. 3rd semester in Advanced Educational Research to evaluate the knowledge of students on the selected topics for treatment. An objective test containing Multiple Choice Questions was constructed.

Statistical Analysis

The data obtained from conducting an achievement test was analyzed with the help of "t" test for testing the significance of difference between the mean of the score of achievement test of students taught through MOOC Programme in blended mode and the mean of the score of achievement test of the students taught through the traditional method.

RESULTS

The computed value of “t” is 9.15. The critical value of “t” with 42 degrees of freedom at 5 percent level of significance is 2.02. The critical value of “t” with 42 degrees of freedom at 0.01 level is 2.71 and the computed value is quite high as compared to it. Hence at both levels of significance, the difference between the means is significant. Therefore, the null hypothesis is rejected at both levels of significance with which it can be stated that the difference between the mean of two groups cannot be attributed to a chance factor. There exists a significant difference between the mean score of the experimental and control group and the online teaching method of MOOC in blended mode is more effective than traditional lecture method.

Educational Implications

- ◆ The new innovative method of teaching, that is, MOOC in blended mode is proposed for teaching in the teacher education programme.
- ◆ Using MOOC in teaching-learning process provide teachers and students with better content and learning environment.
- ◆ MOOC is provided by world prestigious universities which provide learners with world-class quality education. With the help of MOOC student can get a good quality education.
- ◆ MOOC is free and open for everyone, any individual can join it according to their need and interest and understanding. Learners can join it with their regular courses to develop better understanding and cost-effectively get better knowledge.
- ◆ In distance mode, students get limited classes with teachers and professors but with the help of MOOC, a computer can be their class-

room and they can study with online lectures delivered by qualified educationists.

- ◆ Using a blended mode in MOOC provides an opportunity for students and teachers to get a quality education in a restricted period.
- ◆ MOOC can be an effective way of delivering the most updated content as updating content is an easy task.
- ◆ MOOC can be beneficial for students who drop out of education for different reasons. It provides the opportunity to carry on their study to drop-out students.
- ◆ MOOC promotes equality in the education system. SWAYAM- MOOC platform of India also accepts MOOC for providing equality in the education system.

DISCUSSION

Gababri et al. (2017) conducted a study on “Effectiveness of Blended Learning and E-Learning Modes of Instruction on the Performance of Undergraduates in Kwara State, Nigeria.” The study supports that students’ performance is better in blended mode than in traditional mode. The study reveals that undergraduate students’ performance was enhanced when exposed to blended learning. It was recommended that the government and authorities should encourage and support blended learning.

Chen (2016) developed an understanding of the changing trends in education and considered MOOC is the most recent innovation in the education system. The researchers focused on the benefits and challenges faced while offering MOOC. MOOC is massive, that is, available for a huge number of individuals and its openness attract many individuals but the rate of individuals completing the course is very less. Therefore, a huge drop rate is one of the biggest challenges. Course production cost is also one of the challenges in MOOC as it is

Table 1: Mean and “t” test of the control group and experimental group

Group	No. of students	Mean	SD	Df	“t” value	Significance
Experimental group	22	34	5.1	42	9.15	*Significant
Control group	22	32				

*Significant

offered freely to the user unless some course charges for certification and further evaluation at learner's wish. So reducing the production cost is quite difficult and a challenge.

Brallic and Divajak (2016) focused on using MOOC with traditional learning. The research paper "Use of MOOCs in a Traditional Classroom: Blended Learning Approach" mentions that MOOC provides an opportunity for students to explore the online world but also provides help to part time students to achieve better learning outcome. The research is based on a case study where MOOC was introduced at the compulsory graduate course and as a replacement for the traditional method of learning. Students were allowed to choose between MOOC and Project for their final grade. The overall feedback of this study revealed a positive result in which students were found satisfied with this form of learning. Students also seem to face some difficulties such as workload, language barrier etc. Self-paced learning and regular access to knowledge, especially for part-time students were the most appreciated characteristics of MOOC.

Wong and Kiat Ng (2016) conducted a research study, "An Empirical Study on E-Learning versus Traditional Learning among Electronics Engineering Students" published in "American Journal of Applied Sciences" in which they supported that students of e-learning method perform better than the student who learns by traditional method.

Bower et al. (2015) conducted a research study, "Design and Implementation Factors in Blended Synchronous Learning Environments: Outcomes from a Cross-case Analysis." The result of the study was that blended synchronous learning activities are evidenced by better performance.

Israel's (2015) research "Effectiveness of Integrating MOOCs in Traditional Classrooms for Undergraduate Students" states that the students taught by MOOC in blended mode perform equal or slightly better than students of traditional face-to-face class.

Tso (2015) conducted a study, "Reflections on Blended Learning: A Case Study at the Open University of Hong Kong" in which it was concluded that it is expected that a hybrid method of face-to-face learning can produce better results from teaching face-to-face learning (Fang et al. 2012).

CONCLUSION

Students who were taught with MOOC in blended mode show better performance as compared to students taught with traditional lecture method. In the 21st century using a traditional lecture method is not sufficient to deliver effective and efficient teaching and learning. MOOC in blended mode is more effective and efficient new innovative method of teaching in higher education in India.

RECOMMENDATIONS

MOOC is a new trend and only limited studies are conducted on it all over the world. There is a great need to conduct further research on the concept to understand it in a better way and with the culture wise perspective. The present study also had delimitation with perspective to time availability and resources available. Therefore, the present study opens new windows for conducting further research. Based on the present study, researchers recommend that similar studies can be conducted in other cultures, districts and states of India. The present study was limited to a particular institution. Further research can be conducted on other institutions and universities with an open invitation for all interested participants. Studies can be conducted to find the effectiveness of MOOC on distance mode, schools, and college students. The present study used MOOC as an online course in blended mode. MOOC can be studied in the flipped classrooms for further research. These suggestions provide an idea to researchers for conducting any further related research.

LIMITATIONS OF THE STUDY

In spite of careful planning and implementation of study, it is delimited by the sample being restricted to Post Graduate students of the Department of Education of Maharshi Dayanand University Rohtak. MOOC Programme in the study had covered limited topics of research methodology and the study also had a limited number of days of academic session.

REFERENCES

Aggarwal Anant 2016. Where Higher Education is Headed in the 21st Century: Unbundling the Clock, Curricu-

- lum and Credential. *The Economic Times*, May 12, 2016. From <<https://economictimes.indiatimes.com/industry/services/education/Where-higher-education-is-headed-in-the-21st-century-Unbundling-the-clock-curriculum-and-credential/articleshow/52234613.cms>> (Retrieved on 13 April 2018).
- Armellini A, Rodriguez BC 2016. Are Massive Open Online Courses (MOOCs) Pedagogically Innovative? *Journal of Interactive Online Learning*, 14. From <<http://www.ncolr.org/jiol/issues/pdf/14.1.2.pdf>> (Retrieved on 18 April 2018).
- Bast 2018. Learning On The Go. *The Hindu*. July 14, 2018. From <<https://www.thehindu.com/education/learning-on-the-go/article24418318.ece>> (Retrieved on 8 May 2018).
- Bower M, Dalgarno B, Kennedy G, Lee J, Kenney J 2015. Design and Implementation Factors in Blended Synchronous Learning Environments: Outcomes from a Cross-case Analysis. *Computer Education*, 86: 1-17. From <<https://www.sciencedirect.com/science/article/pii/S0360131515000755>> (Retrieved on 22 June 2018).
- Braliæ A, Divjak B 2018. Integrating MOOCs in Traditionally Taught Courses: Achieving Learning Outcomes with Blended Learning. *International Journal of Educational Technology in Higher Education*, 15(2): 1-16. From <<https://educationaltechnologyjournal.springeropen.com/articles/10.1186/s41239-017-0085-7>> (Retrieved on 22 August 2018).
- Chea C 2016. Benefits and Challenges of Massive Open Online Courses. *ASEAN Journal of Open Distance Learning*, 8: 1. From <<http://library.oum.edu.my/repository/1065/1/library-document-1065.pdf>> (Retrieved on 27 August 2018).
- English Oxford Living Dictionaries Online. From <<https://en.oxforddictionaries.com/definition/blend>> (Retrieved on 6 April 2018).
- Fang L, Chow SH, Soo WM 2015. Reflections on Blended Learning: A Case Study at the Open University of Hong Kong. *Asian Association of Open Universities Journal*, 10: 77-86. From <<https://www.emeraldinsight.com/doi/abs/10.1108/AAOUJ-10-01-2015-B008>> (Retrieved on 29 August 2018).
- Gababri I, Shittu T, Ogunlade O, Osunlade O 2017. Effectiveness of Blended Learning and E-Learning Modes of Instruction on the Performance of Undergraduates in Kwara State, Nigeria. *Malaysian Online Journal of Educational Sciences*. From <https://www.researchgate.net/publication/312017418_Effectiveness_of_Blended_Learning_and_ELearning_Modes_of_Instruction_on_the_Performance_of_Undergraduates_in_Kwara_State_Nigeria> (Retrieved on 27 August 2018).
- Israel MJ 2015. Effectiveness of Integrating MOOCs in Traditional Classrooms for Undergraduate Students. *The International Review of Research in Open and Distributed Learning*, 16. From <<http://www.irrodl.org/index.php/irrodl/article/view/2222/3402>> (Retrieved on 21 August 2018).
- Jansen D, Schuwer R 2016. Benefits and Challenges of Massive Open Online Courses. *ASEAN Journal of Open Distance Learning*, 8: 1. From <<http://library.oum.edu.my/repository/1065/1/library-document-1065.pdf>> (Retrieved on 8 May 2018).
- Official News and Events of Harvard. From <<https://vpal.harvard.edu/news/harvard-and-mit-researchers-release-new-report-open-online-courses>> (Retrieved on 15 April 2018).
- Official Page of Educase Library Online 2018. From <<https://library.educause.edu/topics/teaching-and-learning/massive-open-online-course-mooc>> (Retrieved on 15 April 2018).
- Official Page of English Oxford Living Dictionaries Online 2018. From <<https://en.oxforddictionaries.com/definition/mooc>> (Retrieved on 9 April 2018).
- Tso AW 2015. Reflections on Blended Learning: A Case Study at the Open University of Hong Kong. *Asian Association of Open Universities Journal*, 10: 77-86. From <<https://www.emeraldinsight.com/doi/abs/10.1108/AAOUJ-10-01-2015-B008>> (Retrieved on 23 May 2018).
- Wong WK, Kiat PN 2016. An Empirical Study on E-Learning versus Traditional Learning among Electronics Engineering Students. *American Journal of Applied Sciences*, 13(6): 836-844. From <<http://thescipub.com/pdf/10.3844/ajassp.2016.836.844>> (Retrieved on 17 July 2018).

Paper received for publication in April, 2019
Paper accepted for publication in October, 2019