International Journal of Computer Trends and Technology
ISSN: 2231 – 2803 / https://doi.org/10.14445/22312803/IJCTT-V69I4P109

Volume 69 Issue 4, 49-53, April, 2021

Review Article

MOOC Implementation Challenges and Prospects in Higher Technical Education in Indian Scenario-a Review

Sarika Satpute[1], Ashwini Deshpande[2], Swati Joshi[3], Puja Pohakar[4]

[1,3] *Assistant Professor in Electrical Engineering department, Dr. D.Y.Patil Institute of Engineering & Research, Akurdi, Savitribai Phule Pune University, Pune, India*
[2,4] *Assistant Professor in Electrical Engineering department, Pimpri Chinchwad college of Engineering, Nigdi, Savitribai Phule Pune University, Pune, India*

Received Date: 08 March 2021
Revised Date: 21 April 2021
Accepted Date: 23 April 2021

Abstract - *In the past few years in India, learning through online courses has increased tremendously. In this era of online education, Massive Open Online Course (MOOC) is providing the best resource for distance learning. MOOC are the only way to provide quality educational content accessible to a large number of learners. It is an online course aimed at unlimited participation and has open access for learners via the web. Considering today's Indian scenario in the field of education, the Government of India has launched various projects for offering MOOC courses like NPTEL, mooKIT, IITBX, & SWAYAM Central, etc. Swayam central is a platform that would collaborate with Indian students in the field of higher education both online and offline. In this paper, the various challenges that are faced in India in implementing MOOC in higher education are discussed. Also, to revolutionize the current education sector in India, some prospects of MOOC's implementation are proposed here. Some of the challenges like up-gradation of the technological infrastructure of universities and colleges, Awareness of learners, Acceptance by institutions, Diversified population, Evaluation and assessment mechanism & its quality issues with MOOC also access to technology in the rural area are addressed. The MOOC prospect in technical education is also discussed for future scope.*

Keywords - *MOOC, NPTEL, SWAYAM, Challenges & Prospects*

I. INTRODUCTION

In a developing country like India, the use of technology for delivering education is increasing day by day. To fulfill this requirement of Education with technology is considered as the most promising development in education. Also, to provide distance education through online courses, many massive open online educations platforms are arising worldwide. Due to this use of technology & globalization, the concept of learning and teaching has become interesting & undergone a massive change. Education with online courses provides a global learning environment for the learner to access study material anytime from anywhere. In addition to that, courses have interactive learning scope like solving of quizzes & assignment to access the knowledge acquired by students. This further increases the bonding between student & teacher. Also, students can collaborate and interact with Each other learner from around the world.

Massive Open Online Courses (MOOCs) have become a popular avenue for diverse learners to upgrade their knowledge and skills. For implementing MOOC in India, though there were universities and initiatives that focused on distance education much earlier, the arrival of the internet in the 1990s had also brought in the opportunity for increasing access to education through online learning. The Alliance for Lifelong Learning, a non-profit initiative started by Oxford, Yale, and Stanford University in 2000, is one of the earlier initiatives that tried to offer courses at scale through the online medium [4].

The Instructors who are new to creating MOOCs tend to focus on the use of technology features to mimic their classroom actions. While it is necessary to be aware of the technology affordances, it is more important to focus on the pedagogy of how to use the MOOC features effectively to foster student engagement and learning. Hence MOOC instructors need a set of design principles and guidelines to create a learner-centric MOOC. Thus, MOOCs had become a common word by 2012, and the advantages of these courses in terms of access and flexibility that it provides for learners along with the scales that it can reach were widely

appreciated by everyone. With the Train 10,000 Teachers coming up with blended course offerings using its synchronous remote center model for content delivery and the National program on technology-enhanced learning coming up with video repositories from professors of the premier institutes like IITs and IISc

II. MOOC PLATFORMS IN INDIA & ABROAD

Considering today's need in the field of distance education in India, many authorities like UGC, AICTE & MHRD are proving a platform in collaboration with many top institutes. The ample MOOC platforms are made available by the Indian government for proving education with technology as SWAYAM Central, NPTEL, SPOPKEN TUTORIALS by IITBx& DRUPAL, etc. SWAYAM Central learning platform is recently launched by the Indian government. With this platform, more than 2000 courses are available for learners. Students across all universities in India will be able to earn credits on SWAYAM by completing the courses in various areas.[3]

III. INTRODUCTION TO MOOC PLATFORM IN ABROAD

Along with Indian open-source platforms, other open online courses are also available for Indian Learners as; Coursera, Udemy, Canvas, FutureLearn, Udacity, EdX, Khan Academy &many more. Details of the few most popular online learning platforms are discussed here.

A. Coursera

Coursera is a profit-based company was founded in 2012 by two Stanford professors. It has developed its own learning management system (LMS). With more than 37 million users, it is the largest MOOC platform worldwide. This open-source is running courses from top universities like Yale, Michigan, Stanford, leading companies. Coursera is expanding its offers for corporate customers of companies like Google and IBM. In spite of this, a lot of content is still available free of charge. And individual learners find thousands of free video courses for self-study. It provides career advancement with degrees, certificates in the field of data science, computer science & other topics.

B. edX

Like Coursera, edX was founded in 2012 by the elite universities MIT and Harvard. It is operating purely on a non-profit basis. The universities like Oxford, Zurich, and London are offering courses for about 14 to 15 million learners in collaboration with edX. Now a day edX has become the most important provider of digital professional training. It offers 2500+ courses from 140 institutions in all subjects.

C. Future Learn

It is MOOC platform provided by the UK in 2012 in partnership with 12 universities, including King's College London & the University of Leeds. Future learn is a low-cost online course for learners in different fields of education like a bachelor of arts in international business or a master of science in cybersecurity. This MOOC platform has short courses around 418 to learn new skills in areas like digital product management, ecology and wildlife science, and the future of globalization. It provides narrative course structure with some task provided to the learners, which help the learner to stay at the top position of coursework. Learners can interact one to one through network support.

D. Udemy

Udemy, founded in May 2010, is an American online learning platform aimed at professional adults and students. It is one of the most popular MOOC platforms, which offers 150,000 courses in 65 Languages. Udemy has developed their own learning management system (LMS) like Coursera. It has an important feature that it provides the number of variety of free courses. By paying for premium content, users also gain access to features like direct messaging, Q&A, and certificates of completion. It provides courses under different categories like Finance & Accounting Health & Fitness, Photography, etc. It also helps students by offering various courses to improve personal development & stress management.

IV. INTRODUCTION TO MOOC PLATFORMS IN INDIA

As discussed in the above part, like abroad, in India also many MOOC platforms are made available by the Indian government for proving education with technology as SWAYAM Central, NPTEL, SPOKEN TUTORIALS by IITBx& DRUPAL, etc. Based on data collected from reference papers & the web, a list of key features, Technology supported, and the potential of a few of the most popular platforms are discussed here in detail [3].

A. SWAYAM Central

To provide access to the best quality learning resources across the country, the project of 'Study Webs of Active Learning for Young Aspiring Minds (SWAYAM) has been recently launched by the Indian Government(MHRD), which helps to bind Indian higher education both online & offline. SWAYAM provides an integrated platform and portal for online courses, using information and communication technology (ICT) and covering High School till all higher education subjects and skill sector courses to ensure that every student benefits from learning material through ICT.

As per MHRD Guidelines for the launching of SWAYAM in India, It follows 'Four quadrant approach' means e-learning system that has the following components [4]:

- Quadrant-I is e-Tutorial: In this quadrant, Video and Audio Content in an organized form, Animation, Simulations, video demonstrations, Virtual Labs, etc.
- Quadrant-II is e-Content: It contains PDF, Text, e-Books, illustrations, video demonstrations, documents, and Interactive simulations wherever required.
- Quadrant-III is Web Resources: This quadrant consists of Related Links, Wikipedia Development, of Course, Open source Content on Internet, Case Studies, books including e-books, research papers & journals, Anecdotal information, Historical development of the subject, Articles, etc.
- Quadrant-IV is Self-Assessment: Problems and Solutions, in the form of Multiple Choice Questions, Fill in the blanks, Matching Questions, Short Answer Questions, Long Answer Questions, Quizzes, Assignments and solutions, Discussion forum topics and setting up the FAQs, Clarifications on general misconceptions are the main content of it.

B. Following are the features of SWYAM

It provides a High-quality learning experience using multimedia on an anytime, anywhere basis.
It is a tool that gives web and mobile-based interactive e-content for all courses Peer group interaction and discussion forum to clarify doubts
A state-of-the-art system that allows easy access, monitoring, and certification.
A hybrid model of delivery that adds to the quality of classroom teaching.

C. NPTEL

NPTEL is a "National Programme on Technology Enhanced Learning" which is initiatively conducted by seven Indian Institutes of Technology (IIT Bombay, IIT Delhi, Guwahati, Kanpur, Kharagpur, Madras, and Roorkee) and Indian Institute of Science (IISc) for creating course contents in engineering and science. It is initiated by MHRD in 2003 in India. NPTEL offers various courses for Engineering, Management, Humanities & social sciences, also in the field of Science and Medical. NPTEL project's central idea is to put recorded lectures taught by its member institutes online for open access. It is one of the most extensive online education platform which facilitates learners to attend recorded lectures through YouTube channel. Online Courses offered by NPTEL also provide a certificate to the learner after completion of the course. Based on data collected, NPTEL offers web and video courses across 23 disciplines on their portal nptel.ac.in. Also, it is offering more than 1200 courses currently and planning to launch 600 plus courses in various fields for the period of 2016 to 2020.[3]

D. SPOKEN Tutorials by IITBX

The Spoken Tutorial project is funded by the National Mission on Education through Information and Communication Technology (ICT), launched by the Ministry of Human Resources and Development, Government of India. It one of the most important MOOC platforms for self-learners. A spoken Tutorials provide a screencast with running commentary, a recording of computer sessions created for self-learning. It is a Project developed under the National Mission on Education through Information & Communication Technology which was launched by MHRD, Government of India in 2014. AS per web data available on the web, currently, it is offering more than 63 courses on different subjects from multiple disciplines. Spoken Tutorials is a project is initiated with the motto of "Talk to Teacher."
Spoken Tutorials (www.spoken-tutorial.org), initiated by Prof. Kannan Moudgalya at IIT Bombay, teaches programming languages, office tools, graphic and circuit design tools through audio-video tutorials in a simple and interesting manner.
The audio-visual content is now available in most Indian languages such as Hindi, Kannada, Marathi, Telugu, Assamese, Bengali, and even Sanskrit and many foreign languages and that too. Free of cost!

V. IMPLEMENTATION CHALLENGES FOR MOOC IN INDIA

As we all know that India is a developing country, this impact of the growing country also reflects in the field of online education. In India, the MOOC concept has expanded rapidly, so India has also taken initiatives to implement MOOCs at a large scale, but some of the major concerns regarding the implementation of MOOCs in India [6] are as follows:

A. Technological Infrastructure

As the MOOC platform is completely based on technology, so the technological infrastructure is an important concern for its implementation. It needs high-speed connectivity of internet for accessing the online content, of course. India is a developing country. Rural areas have very less availability of computers and internet connectivity. It creates difficulties for learners to continue their participation in MOOCs.

B. Awareness among Learners & Teachers

In India, most of the learners & Teachers believe in classroom teaching, so it is very difficult to develop awareness about MOOC among them. Most of the online education platforms, they are providing recorded sessions for the course content, which can make the learner feel isolated, and two-way communication could not happen, which may lead to distracting learner's attention and may drop out their interest. Therefore the requirement of hands-on training sessions may not fulfill the purpose completely in online mode. For this, it is very important to develop awareness among learners & teachers.

C. Acceptance by the Academic Institution

In India, many institutions are not aware of the MOOC platforms. It is very important to accept online learning platforms. As per one survey conducted on faculties in 2017(6), the awareness among teachers regarding MOOCs is still low even after completing almost two years of the official launch of the SWAYAM portal. The various studies show that teacher educators and institutes are having basic ideas about MOOC. So the major concern of understanding and acceptance awareness of MOOCs among teachers is today's need in India.

D. Diversified population

India is a country where multiple languages are spoken. Most of the courses offered on the MOOCs platform are in the English language. Many learners are not comfortable with the course in the English Language. Due to this, learners are dropping their interest in enrolling for the MOOC course. To overcome this problem, some of the MOOC platforms like SPOKEN Tutorials by IITBX are offering courses in local languages but still, the packages offered by IITBX are also not attracting the learners to enroll for MOOC.

E. Quality of courses

For delivering the course content of online education, it is very important to have quality and efficient teachers. It is also important to develop the learner's interest in the course, which will only be possible when the teacher could deliver quality content. In India, there is a huge deficiency of technically sound teachers. Also, they are not familiar with the use of technology for developing courses due to the absence of laboratories. The quality resource person can deliver quality content. For this, teachers need to work to enhance their knowledge to impart effectively to their learners.

VI. MOOC PROSPECTS IN HIGHER TECHNICAL EDUCATION

Currently, MOOC platforms are being used globally for offering online courses. Considering this global revaluation in the field of education, India also needs to accept the change and challenges in the education system. Nowadays, in India also many courses are made available online. This gives additional knowledge to the learners. Also, it helps to develop a knowledge of the subject as per industry requirement, which is very important to develop the interest of learners in MOOC in higher technical education. As per the above discussion, there are some challenges for the implementation of MOOC in India like up-gradation of existing technological infrastructure, awareness among learners & teachers, diversified population, availability of Internet in rural areas, etc. To overcome these challenges, many universities are working on them. Looking into the MOOC benefits & future scope in the higher education system, many universities are taking this as an opportunity for development. Considering this scenario, few major Prospects in MOOC development in higher technical education in India are listed below.

A. Internet connectivity

Nowadays, many communication industries are coming up with high-speed internet connectivity at minimum charges. These companies are providing good bandwidth of internet in Urban as well as rural areas. This gives opportunity to the learners to enroll in MOOC courses using computers or smartphones. Many universities in India are upgrading their technological infrastructure to take advantage of online courses for their student.

B. Awareness among the learners

A large no of students from higher technical education backgrounds is interested in studying online courses due to the attractive features of MOOC like remote operation, time flexibility, access to high-quality course content, etc.[8] . MOOC platform offers very highly educated & expert professors from different universities from the world, which is one of the unique features of MOOC to stay connected to learners with it.

C. Conceptual Learning

Students belonging to the technical background are mainly interested in the technical explanation of courses. They always love to visualize the course content through video lectures, discussion forums, peer assessment, online assignments, etc. MOOC courses are made available for all these features in the online platform. Along with, MOOCs are valuable for developing basic conceptual learning and for creating large online communities of interest or practice.

D. Personalized Learning

Today's young generation believes in self-learning methods. Due to the ample use and availability of internet connectivity, Indian youth are very much fascinated by online courses. India is the world's second-largest populated country; people in India are making extensive use of the internet for their work. This behavior of people also reflects in the adoption of online learning. MOOC platform has open access for such learners who believe in personalized learning behavior, with the advent of big data & network from anywhere and anytime.

E. Student Centric perspective

It is one of the important features of the MOOC platform. This perspective cannot be fulfilled without self-motivation & the involvement of the student in the course. This is reflating in many online platforms like NPTEL, SWAYAM, IITB-X, etc. The graph of student's enrollment for various courses is increasing continuously. Also, nowadays, students in India are also fascinated by MOOC platforms like UDEMY, COURSERA, as these platform are providing many courses, are made available free of cost or at minimum charges.

VII. CONCLUSION

India is a developing country, and the Indian education system is still developing in the field of technical infrastructure, resources, quality of education. Adopting change in the education system is very much important for the growth of the nation. MOOC platform provides this opportunity to the country to build high expertise and technically sound population. MOOC connecting learners not only locally or regionally but globally as well. So for this, it is very important to develop awareness in the learners to enroll in the various MOOC courses. MHRD has made available many online platforms such as NPTEL, mooKIT, IITBX, and SWAYAM for learners. The need is to develop awareness & interest in the learners. Many universities are accepting MOOC certification courses. Also, making available resources for it. In spite of many challenges for the MOOC implementation in India, such as technological infrastructure, awareness among learners, quality of education, diversified population, there are many scopes for MOOC future development. Prospects like conceptual and basic learning, student-centric module, personalized learning approach, etc., cannot be ignored.

REFERENCES

[1] Kaplan, Andreas M.; Haenlein, Michael ., Higher education and the digital revolution: About MOOCs, SPOCs, social media, and the Cookie Monster, Business Horizons. 59 (4) (2016)441-50 doi:10.1016/j.bushor.2016.03.008

[2] Leontyev, Alexey; Baranov, Dmitry., Massive Open Online Courses in Chemistry: A Comparative Overview of Platforms and Features, Journal of Chemical Education, 90 (11) (2013) 15331539. Bibcode:2013JChEd..90.1533L. doi:10.1021/ed400283x. ISSN 0021-9584

[3] Jyoti Chauhan., OVERVIEW of MOOC in India –International Journal of Computer & Technology (IJCTT), 49(2) (2017).

[4] MHRD Guidelines ., Massive Open Online Courses An initiative under National Mission on Education through Information Communication Technology

[5] National Programme on Technology Enhanced Learning,https://nptel.ac.in/

[6] Dr. H. K. Dolly ., Massive open online courses: opportunities and challenges in India Lopon Studies in Indian Place Names ISSN: 2394-3114 (UGC Care Journal) 40(33) (2020).

[7] Rajwinder Kaur Assistant Professor, Khalsa College of Education, Amritsar, Punjab, India, Moocs In Higher Education: Challenges And Opportunities, International Journal of 3600, Special Issue, UGC Approved Journal No: 63594 ISSN No: 2320-7132 (Online) ISSN No: 2320-7124, 7 (2019) 115-118.

[8] Santu Biswas &Monalisa Sarkar Journal of Information and Computational Science, MOOC: Challenges & Prospects in Indian Higher Education, 10(2) (2020). ISSN: 1548-7741

[9] Puja Devgun., Prospects for Success of MOOC in Higher Education, International Journal of Information and Computation Technology. ISSN 0974-2239 , 3(7) (2013) 641-646

[10] Garg, D., Major Challenges in online Higher Educational Environment. (2017). http://blogs.timesofindia.indiatimes.com/breaking-shackles/major-challenges-in-onlin higher-educational- environment/

[11] Chatterjee, P., &Nath, A., Massive open online courses (MOOCs) in education—A case study in Indian context and vision to ubiquitous learning, In MOOC, Innovation, and Technology in Education (MITE), IEEE International Conference on IEEE, (2014) 36-41.