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Research Paper Title: **MOOCs in India: Changing Trend towards Open Distance Learning**

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DECLARATION

I, the undersigned, hereby would like to explicitly state that the write-up titled, "**MOOC in India: Changing Trend towards Open Distance Learning** " is original and has not been published earlier, or that it is not under consideration for possible publication elsewhere.

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MOOCs in India: Changing Trend towards Open Distance Learning

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Abstract

A massive open on-line courses (MOOCs) could be a model for delivering learning content online to a large number of individuals. These are open on-line courses without any restriction on number of participants and there is no limitation on accessibility. MOOCs gained popularity in early 2010s and are best alternative to the normal instructional model. MOOCs are centered on the teaching pedagogue and providing digital content to all students. The present study attempts to introduce different MOOC platforms available in India, the technology used, major challenges faced by them, and also future scope of MOOCs.

Keywords: MOOCs, xMOOCs, cMOOCs, eLearning, SWAYAM,

Introduction

A massive open on-line course (MOOC) represents a learning platform on internet, which gives open access to unlimited participants, sanctionative over ancient learning models and materials together with recorded lectures, quizzes, interactive forums and communities. It is one of the most recent additions in the field of distance learning. MOOCs are student friendly because there are no complicated procedures or formalities or prerequisites for enrollment to these courses. No hefty tuition fees are charged. Several such courses are available free of cost, whereas others charge rock-bottom fees (Chakravarty & Jaspreet, 2016). The resources provided are recorded lectures and primarily image-based tutorial contents, which are made available through this platform to plentiful participants. With the flexibility of time and place, MOOCs bring together students and 'like-minded fellow learners' across the globe (Baturay, 2015). The necessity of MOOCs came along in conjunction with the digitalization as well as the necessity of grasping information at a quick pace and lifelong learning. Therefore, fresh approaches are necessary to meet the learner's needs.

In this paper, we have described characteristics and forms of MOOCs,

global and Indian scenario of MOOCs, completely different platforms of MOOCs in India, key challenges for MOOCs, technology employed by these platforms, and future scope of MOOCs.

Characteristics of MOOCs:

1. **Massive:** MOOCs can accommodate huge number of participants. Across the globe, it witnessed over 180 million registrations. In 2020, MOOCs providers launched more than 2800 courses, 19 on-line degrees, and 360 micro credentials (Class Central, 2020).
2. **Open:** Anybody who is interested in learning can participate in MOOC with no requirements of a formal qualification. Participation is absolutely free to anybody who has access to internet. A participant may enroll for more than 1 course. The materials developed through the course is sharable and accessible to all registered students.
3. **Interactive:** MOOCs are extremely interactive. They provide opportunities to move not solely with the tutors but also conjointly with fellow students. The participants are inspired to make and share their contributions.
4. **Four Quadrant Approach:** e-Content, e-Tutorial, Discussion forum, and Assessment.

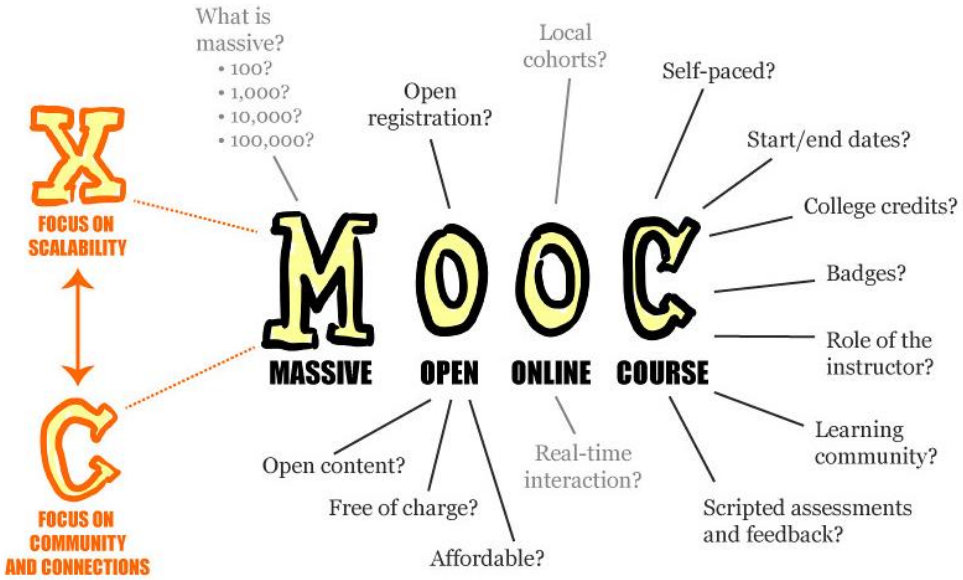


Figure 1 Large open on-line course (MOOCs; Nisha & Senthil (2015))

Forms of MOOCs

MOOCs are categorized into C-MOOCs and X-MOOCs.

i. **C-MOOCs:** they are supported connectivism. It is a creation of learner-centered environment referred to as connectivist. MOOC and hinge on the concept and platform originally visualized by patron saint Siemens.

ii. **X-MOOCs:** they need their background within the evolution of open courseware and open instructional resources. X-MOOCs are typically offered by universities in collaboration with a billboard organization whose aim is to get profit. X-MOOCs are online versions of ancient learning techniques (lecture, instruction, discussion, etc.) on proprietary specialist package platforms closely held by independent firms. They attribute legitimate and financial relationships between the technology providers and the universities that produce the content. X indicates the MOOCs that are content-based and follow additional behaviourist approach (Trehan et al., 2017). X-MOOCs are associated largely with the 3 largest platforms: edX, Udacity, and Coursera (Trehan et al., 2017).

MOOCs: World State of Affairs

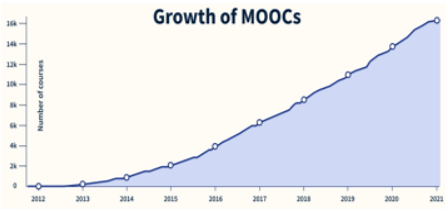
Across the world, there are several educational institutions, and top-quality educational establishments offer many MOOCs platforms. Coursera, EdX, Udacity, Udemy, Iversity, MiriadaX and FutureLearn provide a number of well-known MOOCs platforms across the United States of America and Europe. Table 1 shows numerous MOOC providers in various nations.

Table 1

S. No	MOOCs Provider	Country
1.	Coursera	United States of America
2.	edX	United States of America
3.	Udacity	United States of America
4.	Kadenze	United States of America
5.	Canvas Network	United States of America
6.	Stanford Languita	United States of America
7.	FutureLearn	United Kingdom
8.	European Multiple MOOC Aggregator (EMMA)	European Union
9.	Open Education (openedu.ru)	Russia
10.	XuetangX	China
11.	CNMOOC	China
12.	Chinese MOOCS	China
13.	University of China MOOC	China
14.	Zhihuishu	China
15.	OpenHPI	Germany
16.	gacco	Japan
17.	Fisdom	Japan
18.	OpenLearning	Japan
19.	JMOOC	Japan
20.	ewant	Taiwan
21.	Open Education (openedu.tw)	Taiwan
22.	Edraak	Jordan
23.	Miríada X	Spain
24.	MéxicoX	Mexico
25.	France UniversitéNumérique	France
26.	EduOpen	Italy
27.	Federica.eu	Italy
28.	ThaiMOOC	Thailand
29.	K-MOOC	Korea
30.	IndonesiaX	Indonesia
31.	Prometheus	Ukraine

Table 1 MOOC providers in various nations (Source: Category Central, 2018)

Class Central statistics (Fig. 2) declared that the fashionable MOOCs movement has more than 180 million learners across the world, excluding China. In 2020, MOOC providers launched over 2800 courses, 19 online degrees and 360 micro credentials.



Source: Class central, 2020

Fig. 2 Class Central statistics (Class Central, 2020)

By the end of year 2020, around 950 universities worldwide were going to launch 16,300 MOOCs. In 2020 alone, around 2800 courses were added. Within year 2020, MOOC providers' growth had stagnated: they were gaining the same number of students every year. However, in year 2020, the MOOC providers gained

over 60 million new students altogether. Half of these were only for Coursera (Fig. 3). During this year 2020, the UN agency gained virtually as many users than edX, its nearest rival, gained since its inception.

	Learners	Courses	Microcredentials	Degrees
Coursera	76 million	4,600[3]	610	25
edX	35 million	3,100	385	13
FutureLearn[2,4]	14 million	1,160	86	28
Swayam[2]	16 million	1,130	0	0

Source: Class central, 2020

Fig. 3 MOOC providers' growth (Class Central, 2020)

Overall, the distribution of courses across subjects remains similar to last year. 40% courses belong to the classes that are highest revenue generating: business and technology.

MOOCs: Indian State of Affairs

MOOCs have huge opportunities in India. The number of students enrolling for courses have increased drastically in recent past in India. India is determined to be one of the leading countries in terms of enrolments in courses offered by several fashionable MOOC providers together with edX, Coursera and Udacity. MOOCs have encouraged many organizations in India to enter this domain to beat the unmet demand for higher education. This online education is available in English and able to be translated in several regional languages to deliver highest quality education in all states of India. India recorded enormous growth in MOOCs and is dominating the worldwide development in this domain. Chief Operating Officer of Coursera, Mr. Richard Levin, said that India is one of the leading five nations in terms of revenue generated for Coursera and is also the second largest country with respect to number of registered users (Economic Times, 2014). IITBX, mooKIT, NPTEL and SWAYAM were launched and are functioning from India to deliver MOOCs. The key reason for this growth is low rate of enrolment in teaching.

MOOCs Progress in India

Web Platform/Provider	Year	Initiative
NPTEL	2006	NPTEL was started as educational content repository as MIT Open Course Ware. Today, It is one of largest publishers of OERs in the world.
	2014	NPTEL MOOCs powered by Course Builder were launched. Course builder is Google's open-source platform. The first batch provided 3 courses. It stated between July and December 2016.
	2015-16	In 2015, NPTEL offered 90 MOOCs. Between January and May 2016, 47 new courses were offered and 100 MOOCs started between July and December 2016.
mooKIT	2012	A lightweight platform designed and developed in IIT Kanpur in the year 2012.
	2014	Two MOOCs were launched using this platform: (a) Architecting Software for the Cloud. (b) MOOC on MOOCs: It witnessed around 2300 participants.
	2016	It launched a program called agMOOCs which comprised of 5 agricultural courses. Students and teachers of agricultural programmes were the target of agMOOCs.
edX and Coursera (Indian MOOCs)	2014	In July 2014, the first Indian MOOC on edX was developed and it targeted learners across the world. It witnessed massive success and attracted over 35,000 learners.

	2015	IIT Bombay, Birla Institute of Technology and Science Pilani, IIM Bangalore and Indian School of Business have launched MOOCs on edX and Coursera.
SWAYAM	2014	Ministry of Human Rights Development (MHRD) announced SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds) under its National Mission on Education through Information & Communication Technology (NMEICT).
	2015	MHRD formed the 'Main Committee regarding SWAYAM platform for MOOCs' to conduct a thorough examination of all elements for a successful MOOCs project.
	2016	2016 (March) MHRD developed and provided guidelines to institutions in India for development and implementation of MOOCs. 2016 (June) Microsoft was being awarded a contract for development of SWAYAM.
	2017	The SWAYAM portal was successfully launched on July 9, 2017.

Table 1 Progress of MOOCs in India (Trehan et al., 2017)

Main Challenges For MOOCs in Republic of India

1) Creation of digital content: This is an enormous challenge. Digital content includes voice, video, formatted text and animation. Apart from subject matter experts, this needs digital content developer. Digital content creation needs high quality devices

accustomed to read the digital content and once created to transfer it.

2) Internet access: The most necessary and major challenge is internet access and speed. This is a major hurdle in rural areas in India where the internet service providers are less.
3) Roadblock: Language barrier may be a major constraint for online education, notably in Republic of India. Most online platforms deliver courses in English. MOOCs need to take into account this issue and deliver the courses in regional languages as well and the courses need to be in native contexts.
4) Assessment and evaluation: Correct assessment strategies need to be incorporated wherever vast investment is involved.
5) Dropout magnitude relation: One of the biggest challenge for MOOCs is high dropout ratio. Barely 5% to 10% of registered individuals complete the entire course (De Coutere, 2014). Motivation to participate and continue with the courses is needed to overcome the dropout magnitude relation. The learners need to be encouraged to complete the courses by highlighting the skill development, personal growth and economic profit they would acquire after completing these courses.

Technology Used

To offer MOOCs, establishments have to choose self-hosted platforms, or use platform such as Coursera and Udacity. Once opting for self-hosted platform, the providers will prefer to 1) develop their own MOOCs platform similar to IIT Kanpur's mooKIT, or 2) use ASCII text file platform readily available. Indian government invariably believes in promoting the utilization of existing ASCII text file platform as their preference. These platforms could need modification and customization as per the need. Currently, NPTEL and IITBX are live examples of such effort working effortlessly using the open source technology.

1. **Course Builder:** NPTEL courses run on Course Builder, its Associate in Nursing ASCII text file platform created by Google in 2012. This platform is supported by the package and technology Google empowered for their online courses. Anyone can provide own courses utilizing this

Course Builder platform. This platform provides basic practicality for presenting course material, as well as learner activities and assessments and directions for targeting alternative Google product to make a course community. It provides basic services such as Google accounts, hangouts, and friend circles, which might be used as social networking feature, if enforced properly. Course Builder is made on Google app engine; it is written in Python. It uses the Google app engine to host the online application and Python for server aspect scripting. In 2013, Google announced collaborating with edX as a contributor to the ASCII text file platform, Open edX. Since then, Google solely provides maintenance for previous platform. No future upgradation is completed from them.

2. **Drupal:** MooKIT platform is developed utilizing Drupal, Associate in Nursing ASCII text file Content Management System (CMS). It is used as a back-end system for a minimum of 1.5% of all websites worldwide, starting from personal blogs to company, political and government sites. It is collectively used for data management and business collaboration. Drupal base code is written in PHP and it provides the user varied Drupal Apis to figure with and implement any feature on his own or uses contributed modules if the feature is already enforced. It is hosted on Apache Internet Server as Associate in Nursing application. Drupal features a vast support of around 6500 contributed modules which extend options provided by Drupal Core. For developing mooKIT, Drupal is selected because the CMS which is a core a part of the platform uses various alternative modules and services outlined to permit the user to access services of Drupal. These modules are written primarily in PHP and Java Script.
3. **Open edX:** IITBX is the platform developed at IIT Bombay by through significant customization of open edX code base. Its Associate in Nursing ASCII text file was unleashed on edX platform in 2013. EdX is developed by Harvard University and Massachusetts Institute of Technology (MIT). Open edX platform is getting used by

educational providers to host their own MOOCs across the globe. It also can be accustomed to host short courses and coaching modules. Also, educators will extend the platform to make learning tools that exactly meet their wants, and developers will contribute new options to the Open edX platform, thanks to nature of its availability as Associate in Nursing ASCII text file. Currently, it is used by various elite universities such as Stanford, also premier organizations such as Microsoft, and 2 Indian MOOCs, IITBX and SWAYAM, also are on the list. The entire list of its users is offered at Open online course for India's agri-professionals launched (2014). Open edX is almost entirely supported python with Django because the internet framework. It is a web-based platform for making, delivering and analyzing online courses. It is designed and developed utilizing the standard approach "LMS module" permitting learners to access course content such as videos, textbooks, problems and to examine their progress within the course, delivered by the "CMS or Studio module." These modules are designed for learners as well as pedagogue to make course structure and add course content. They, conjointly manage the course schedule, course team and set grading policy. Moreover, Open edX permits the users to research their course by providing a selected module named "Insight." It supports best and most of the advanced options for learners as well as the course providers.

4. **SWAYAM:** It runs on Associate in Nursing freelance platform which is formed in cooperation with the Microsoft. This platform is launched recently and is in growing stage. Therefore, most of its details are unobtainable currently.

Future Prospects of MOOCs

Looking at the present trends, it is expected that online pedagogy market can witness considerable growth within next 5 years and aid in distance learning programmes. However, since these courses are restricted to theoretical content presently, adoption of virtual room ideas may bring a sensible part within the online medium. Apart from that,

a lot of scholars, particularly from rural areas are expected to adopt completely different online channels to arrange for competitive exams. This is often considering the restricted choices obtainable for offline test preparation at these places.

Hybrid model is predicted to achieve traction in future, wherever online players are expected to open offline centers to supply classroom-like expertise to students. Also, gamification, the approach of introducing fun components such as game style in learning, is probably going to achieve quality in India. As per the report, some players have already started entering the space in order to boost engagement of learners.

There is little question that MOOCs have shown its scale of outcomes that are vastly positive that has to be completely evaluated and regarded and thought of by colleges, directors and policy manufacturers.

The MOOC providers have immense funds which will be placed to nice use if they are endowed unbiased with the thought of betterment. Following suggestions could be useful as artistic movement plan of MOOC studies:

1) The MOOC corporations and investors ought to be a lot careful and not act as typical businessmen or educationists. There should be a combination of both and they should stop attempting to sell their products thinking they might be the final word answer for all the education issues. This instance may facilitate the MOOC approach to all concerning students who have remediation and alternative learning defaults and who lack the essential skills of making, writing and arithmetic.
2) With the apt quantity of economic resources in their hands, MOOC corporations ought to reform and develop a lot of apprenticeship inclined course materials which will be employed in a lot of homogenized online format instead of absolutely online formats. Actually in future as we have a tendency to see MOOCs, it might indeed be probable to lie with blended learning that allows only meaningful involvement of faculty. To do so, they could even be compelled to omit the MOOCs completely as a result of their final product layout might not be immense and ponderous in terms of hundreds and thousands of scholars' enrolments and additionally may not be open or free. Rather, the course providers

and associated developers may rebrand themselves as providers of top quality content providers and provide a choice to the schools with a best method they might use their materials.

3) MOOCs being non-public enterprises might need to find a way to return their investments and create a profit out of everything. At some point of time, the initial investment will run out and then the companies would be in a need to generate revenue. Therefore, it is doubtless that some will survive and some would not. This seems to be a significant enigma for MOOCs developers that distinguishes them from division and tutorial style competitions at schools. UN agency develops their own on-line course materials on modest budgets primarily for teaching functions and not with the intention of earning a profit.

Conclusion

The MOOCs are the future of today's distance learning. They made the education simply accessible to anyone, at any place, at any time around the globe and improved people's lives by providing versatile and quality learning. They made a difference by providing free courses and enabled students around the world to participate, interact, discuss and learn from the expert faculties all over the world. MOOCs changed people's lives and produced out real change in communities. However, there might be a value effective and clever management for running MOOCs and a well adopted strategy which fits the universities and institutions. The MOOCs and on-line education have immense potential which might facilitate, guarantee and accelerate social cohesion and property growth. With very little efforts by the Government of India, online education is being offered to each individual. The education system managed through advanced technologies and online studies will certainly facilitate India to nurture its growth. 35 MOOCs may facilitate science and technology education accessible to plenty, however need to develop technical skills among students. The thirst for MOOCs is rapidly growing among Indians and that they have opted MOOCs for creating global classrooms a reality. For Indians, UN agency have a thirst for quality-based western education. MOOCs are serving as a desirable model in this direction.

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