

Marching Towards Access and Equity in Higher Education – An Exploration of Infinite Possibilities of *MOOC*

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Abstract: *MOOCs* (Massive Open Online Courses) are a relatively recent online learning model with infinite possibilities of offering freedom for access to higher education. The *MOOC* design depicts a future of openness in higher education. The evolution of *MOOC* based on the ideals that knowledge should be shared freely, and the urge to learn should be met without demographic, economic, and geographical constraints. In this framework, creative use of technologies makes a wide variety of open education provision. Along the movement towards open education, this new scenario opens up spaces for sharing thoughts, collaborating between institutions, educators and learners locally and internationally, and for expediting more meaningful teaching and learning process.

In order to raise awareness of *MOOCs* and their implications for Higher Education sector in India, this paper synthesises features and characteristics of *MOOCs* and describes their potential as an innovation towards greater openness in Higher Education. Also, the paper tries to discuss possibilities and challenges to integrate *MOOCs* into higher education system of India.

Keywords: Higher education, *MOOCs*, On-line Learning, Openness in education

1. INTRODUCTION

It is an undoubted fact that there has been a phenomenal growth of higher education in India since independence. Annual Report of Department of Higher Education (2013) states there were only 20 Universities and 500 Colleges at

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Musthafa, M.N.M.A. Mohammed, N.T. the time of independence. These number have increased by 29 times (i.e. 574) in the case of the Universities and 71times (i.e. 35539) in the case of Colleges. Similarly, there has been tremendous growth in the enrolment also. At the beginning of Academic year 2011-12, the total number of students enrolled, in the formal system, in the Universities and Colleges has been reported to be 203.27 lakh. Similarly, there has also been growth in different programmes in Technical Education as such, during 2011-12 about 13507 Programmes/ Institutions are running and for the year 2011-12, the intake has been 30.14 lakhs. Above, the statistical overview of the higher education system clearly shows that there has been phenomenal growth in Institutions (Universities, Colleges, and Technical Institutions) as well as in intake, enrolment etc since independence (p. 56).

Though there has seen considerable quantitative expansion in education sector during the last two decades, India still suffers from intolerable inequalities. The country is starving with circumscribed access to education for children and young people. Nether quality and inadequate relevance are major difficulties.

According to Educational Statistics at a Glance (2013), the population of the age group 18-23 (higher education level) of India is 14.168 Crore, but has only 11,144 higher education institutions, percentage of expenditure on education of GDP is 4.17 %. That is about 348380.09 crore. At more than 4 percent of the country's GDP, India's spending on higher education is one of the highest in the world. But India has very scanty Gross Enrolment Ratio (GER) in higher education. As per the first provisional report of All India Survey on Higher Education 2010-11 (2013), estimated students enrolment in India comes out to 26.65 million and Gross Enrolment Ratio (GER) at All India level is 18.8 (Male – 20.9, Female–16.5). Table 1 depicts GER of higher education 2010-11 in India.

Table 1: GER of higher education in India 2010-11

Level	All			SC			ST		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	total
Higher education	20.8	17.9	19.4	14.6	12.3	13.5	12.9	9.5	11.2

In this context, it is better to have an analysis on the time series data of GER in higher education of India.

The graphical representation of Table 2 will give a more clear illustration to this phenomenon, which is depicted in Figure 1

Even though India's effort to increase GER seems to be promising, the goal is still far apart. According to UNDP- Human Development Report (2013),

Table 2: Time series data of GER of higher education in India

Year	Higher education		
	Boys	Girls	Total
2001-02	9.3	6.7	8.1
2002-03	10.3	7.5	9.0
2003-04	10.6	7.7	9.2
2004-05	11.6	8.2	10.0
2005-06	13.5	9.4	11.6
2006-07	14.5	10.0	12.4
2007-08	15.2	10.7	13.1
2008-09	15.8	11.4	13.7
2009-10	17.1	12.7	15.0
2010-11	20.8	17.9	19.4

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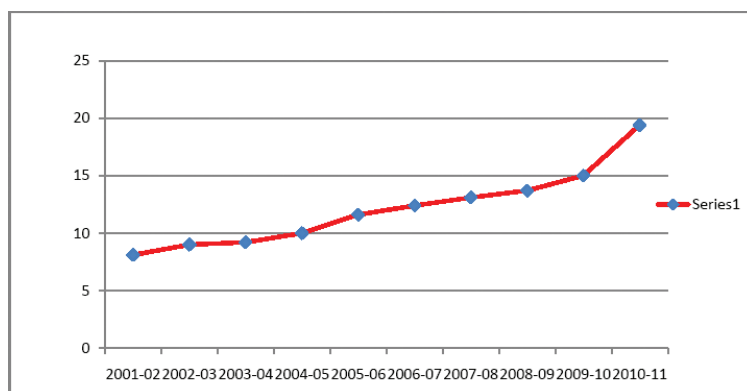


Figure 1: Graphical representation of time series data of GER of India

India has positioned 136th by GER among the countries of world. US have GER 94.8 in higher education. China 81, Brazil 36.1, Iran 42.8. To improve GER, India must continue to swell access to higher education while sustaining quality and reducing costs. This position is not odd to India, but given its huge size and unique position, India's challenges are frightful.

To meet challenges of education sector, the country should have to think to expand utilisation of modern age technologies. Modern Digital technologies

Musthafa, M.N.M.A. have the power to dramatically transform Indian higher education. They have
Mohammed, N.T. potential to generate novel patterns of teaching and learning.

Online learning has evolved over the years, becoming increasingly accessible and gaining trustworthiness as a learning medium. India has tried with online classes before, but their result has been minimal. A decade ago the country designed web-based courses under National Program on Technology Enhanced Learning, a government-funded program. Developers had produced more than 900 courses, focused mainly on science and engineering, with about 40 hours of instruction each. With limited interactivity and poor quality, these courses not succeeded to attract a large body of students.

Massive Open Online Courses (MOOCs) can be used as a potential solution, not to overcome the entire challenges of India's higher education sector, but help to soothe some of the access and quality issues related to higher education. MOOCs are new model that are developed to deliver higher education on a huge scale and at a quality not possible before. Universities all around the world are reforming education on the Web by means of MOOCs. MOOC has reduced the entry barriers and stimulated students to access quality education from the world's top universities like Stanford, Harvard, Massachusetts Institute of Technology (MIT) etc for free. Since there is a high supply-demand imbalance in affordable quality higher education in India, the country is at best suited for the proliferation of MOOC technology.

In order to understand the imminent significance of MOOCs for higher education in India and to consider how MOOCs may lead to conspicuous outcomes, it is better to understand MOOC in details.

2. MASSIVE OPEN ONLINE COURSE (MOOC): CONCEPTUAL CLARIFICATIONS

The term open learning has meant an arrangement in which learners work basically from self-instruction, taking courses structured around specially prepared, printed materials, supplemented with face-to-face tutorials and examination. Open learning shares the same forms in correspondence study as distance education. Institutions of open and distance learning serve as resource centres for community-based learning and provide an infrastructure for creation and supply of learning materials. One of the trends is the emergence of new forms of distance learning based on more interactive telecommunication technologies, with implications of a pedagogical economic and organizational nature. There is a significant trend toward internationalization. Many have related to the Information and Communication Technology as the new generation of distance education (Bates 2001; Garrison 1993).

Soren Niper (1989), in his analysis identified three generations of distance education: the first was correspondence teaching; the second was multi-media teaching – integrating the use of print with broadcast media, cassettes and to some degree computers; and the third generation was identified with the new interactive communication technologies.

Among the various new forms, *MOOC* is of recent origin gaining momentum due to the development of communication via Internet and social media and is still acquiring its meanings. It is an apprising movement for the openness in higher education. It gives more colours to open and distance learning.

A massively open online course (*MOOC*) is a design for providing learning content online to virtually any person, who wants to choose the course. It assembles the connectivity of social networking, the adroitness of a specialist in a field of study and a compilation of freely accessible online resources. Participants can be anyone who has internet facility. They can register freely on any of the *MOOC* providing sites and take courses. The course activities include watching videos, listening lectures, commenting on discussion boards and blogs and discussing via social media platforms. Here ‘Massive’ means the ability to include a large number of students spread over the world. *MOOC* works on the active engagement of huge number of learners who self-organize their participation according to learning goals, prior knowledge and skills, and general interests.

The evolution of *MOOC* based on the ideals of openness in education, that knowledge should be shared freely, and the urge to learn should be met without demographic, economic, and geographical constraints. The primary goal of *MOOC* was to open up education and offer free access to university level education for as many students as possible. *MOOCs* have two main attributes: Open access - anyone can participate in an online course, no pre requisite required and Scalability - courses are designed to include an indefinite number of participants. *MOOC* may lead to revolution in main stream education and even have impacts beyond the domain of education itself. Some of the leading universities have associated with *MOOC* providers, such as Coursera, Udemy etc, to purvey high-quality online courses for free to millions of students around the world.

3. WHAT MAKES MOOC A POTENTIAL SYSTEM FOR OPENNESS?

MOOC participants are not restricted to any university or any geographical area; rather they are distributed all over the world. The course benefits from a rich diversity of ideas arising from many regions, cultures, and perspectives. *MOOCs* have the potential to include as many number of participants, it can be few hundred to several thousands. One of the leading *MOOC* providers

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Eminent teacher can reach out students all over the world. The most significant impact of *MOOC* is its potential to alter the relationship between learner and instructor and between academe and the wider community by effectively providing a very large and diverse meeting place for ideas. The responsibilities of participants are not only to see and hear but also to participate and collaborate. For a maverick lifelong learner, *MOOCs* provides an excellent opportunity to be part of a learning community. It demonstrates that formal learning happens beyond traditional school-age years.

4. MOOC AT ITS OPERATIONAL LEVEL

The curriculum of a MOOC may be similar to that of a standard course, but the teaching learning activities are quite different because MOOCs are addressing a huge assembly of vibrant participants. To handle extremely large students, instructors depend on social media tools to nourish collaborative, participatory, and peer-to-peer learning. The learners can avail educational content anytime, from anyplace and participatory culture using social networks seems to be the greatest benefit that MOOC has brought to the world of education especially in the higher education field. Students can choose synchronous and asynchronous learning activities according to their concern. *MOOC* is usually hosted on easily accessible sites such as a wiki, blog, or a Google site. Enrolment is done online at the MOOCs provider sites. Video lectures, online quizzes, online assignment, virtual labs and learning materials are provided online. Anyone can learn the MOOC courses offered online from anywhere using Internet and a laptop or a smart device.

Registration and course topics are offered through a central course site developed by the MOOC providers. The registered open students can receive announcements and information through their electronic mails. News that a *MOOC* will be proffered is generally spread through online social networks and email lists. Participants can use the central site to view video lessons, interact and discuss ideas, submit assignments etc. They can share contributions from

their own blogs and they can maintain relations through other technologies such as Twitter, face book etc.

MOOCs share the processes of knowledge task, not just its products. Course content is not limited to some textbook syllabus oriented resources. Participants and instructors can gather, arrange and re-determine the content during the course. Learning can be done at participant's own place according to his/her pace. Facilitators discuss their sense making habits and their thinking processes with participants. They also respond to critics and challenges from participants in the course, while in a typical university course, students are not able to get a word in edgewise.

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5. PEDAGOGICAL TREATMENTS OF MOOC

The massive nature of MOOC assures the advantage can be availed not by the limited number of students, but it is outstretched to thousands at the same time. MOOC employ collaborative learning environments. Collaborative learning is based on the assumption that knowledge is a social construct. In collaborative learning, the learner is the primary focus of instruction and interaction is the major method of instruction. Working in groups is an important way of learning.

MOOCs employ mainly two pedagogical styles: cMOOC and xMOOC

Connectivist MOOC, abbreviated as cMOOC, is based on a connectivism theory of learning. It's pedagogical design is peer learning; it promotes active investigation on the part of the learner, sharing with other learners, generating knowledge and cogitating on learning. cMOOC highlights connected, collaborative learning and the courses are built around a group of like-minded individuals. It provides an excellent place to open up new pedagogies beyond traditional classroom settings.

Content-based MOOC abbreviated as xMOOC, follows a more behaviourist approach. xMOOCs are online adaptations of traditional learning formats. Pedagogical design is dominated by the "trial and error" instructional methods with video presentations, short quizzes, testing etc.

Surveys conducted by researchers at Duke University show that student motivations on MOOC courses typically fell into one of the four categories (Belanger and Thornton, 2013):

- To support lifelong learning or gain an understanding of the subject matter, with no particular expectations for completion or achievement
- For fun, entertainment, social experience and intellectual stimulation
- Convenience, often in conjunction with barriers to traditional education options
- To experience or explore online education

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6. MOOC PROVIDERS: SOME OBSERVATIONS ON PEDIGREE

In 2008, George Siemens and Stephen Downes co-taught a class thought to be the first to use the term *MOOC*. The course, called “Connectivism and Connective Knowledge,” was introduced to 25 students at the University of Manitoba and offered at the same time to about 2,300 students from the general public who received the online class at no cost. Today’s *MOOC* contributions are growing swiftly in terms of academic subjects covered, numbers of institutions offering them, and students partaking in them. Some agents providing *MOOC* are Udemy, Udacity, Edx and Coursera. It is better to have an analysis into each of their features.

6.1 Udemy

Udemy is launched by Eren Bali, Oktay Cagler and Gagan Biyani February 2010. Now they have an enormous number of students taking courses from a vast array of subjects like business, arts, health and fitness, technology, education, science and maths etc. They have both paid and free courses, and these include courses from many different universities such as Princeton University, Stanford University, University of California, University of Berkeley, and University of Pennsylvania etc. Recently they have launched a mobile version of their site.

6.2 Udacity

Udacity is an educational establishment founded by Sebastian Thrun, David Stavens and Mike Sokolsky in June 2011. Their task is to bring accessible, affordable and efficacious higher education to the globe. As of 31 July 2014, Udacity has 39 active courses in computer science, mathematics, general sciences, programming, and entrepreneurship etc. Currently there are 1.6 million plus users. When students complete a course, they get a certificate of completion indicating their level of achievement, signed by the instructors, at no cost.

6.3 Coursera

Coursera was founded in April 2012 by Daphne Koller and Andrew Ng from Stanford University. The partner universities at the beginning were Stanford University, Princeton University, University of Michigan and University of Pennsylvania. Currently, there are 107 plus partner universities. Now Coursera is offering wide range of courses spanning Humanities, Medicine, Biology, Social Sciences, Mathematics, Business, Computer Science, Education and many others. Some partner universities offer credit for their Coursera classes

to those who want to pay a fee, to have some extra assignments and work with an instructor and be assessed.

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6.4 EDX

It is a MOOC platform launched by Massachusetts Institute Technology (MIT) and Harvard University in May 2012. Courses from a huge list of subjects such as finance, economics, electronics, philosophy, literature, biology, chemistry, physics, biology, statistics, and computer science etc are available at no cost. Users now become more than 1.7 million. EdX has a number of partnership institutions from U.S, China etc. Currently 29 institutions are offering 94 courses through EdX and the numbers are increasing day by day. Indian Institute of Technology, Mumbai offers courses through EdX like Introduction to computer programming, thermodynamics etc. EdX programmes also utilised for research in learning by collecting learners' responses and demographics.

There is a huge list of MOOC providers all over the world. Larger corporations like Pearson and Google are also planning to move into the Higher Education sector and are likely to adopt a *MOOC*-based approach as a part of their proposals.

7. MOOC: WHAT GAIN INDIAN HIGHER EDUCATION CAN DERIVE?

The Higher Education in India has prodigiously amplified in the last few decades in terms of access, equity and inclusiveness. However our Higher Education system is still facing the challenges of the increased hankerings of the job seekers and job providers. As pointed out by Eduvisors (2012), while overall institutional density increased from 10 to 14 institutions per 1,000 sq. km. during the Eleventh Plan, large number of habitations and settlement clusters with a population of more than 10,000 and less than 1,00,000 are without any proximate institution of higher education. Given the fact that the young learners being the greatest resource, it would be worth pondering whether it is really possible to meet out the exponential rise of the learners in the 15–35 years age bracket from 350 million, which is expected to peak at about 485 million in 2030 (Altbach and Jayaram, 2010). As pointed by Sudarshan and Subramanian (2012) unless it is able to get its act together and put in place a wide range of mechanisms, India will be staring at a tsunami of young people approaching higher education and the system will not have the capacity to meet the demand. In this context the policymakers perception is to lay heavy emphasis enhancement in the HE system by going from the 12% to 30% increase in GER through another 800 to a thousand universities in the

Musthafa, M.N.M.A. next ten years, which seems to be challenging given the fact that right now the
Mohammed, N.T. current number is still below 40 per cent (Sibal, K., 2010).

In this context MOOCs are knocking on the doors of the Indian Higher Education system. MOOCs are expanding access to higher education around the world; especially this is a blessing for learners from developing countries like India, as they now can dream of studying courses offered by privileged universities all over the world. This is clearly visible from the number of students enrolling for these courses from countries like Brazil, China and India. According to Coursera (2012), one of the leading companies offering MOOCs, 5.9% students registering for courses are from Brazil, 5.2% from India, 4.1% from China, which is a small indication that shows popularity of these courses among the learners from developing world. As per latest figures, students from India enrolling for MOOCs increased to 10% on Coursera and 13% on Edx (Nair, 2013).

The demand is there and the content is now available for free, the only thing required is a system to connect the content with Indian students. There are several government-non government educational organisations are working in the country. These organisations should examine their possibilities to offer MOOC. India has many higher education institutions like IIT, IIM etc to offer quality education. Government should take initiations to start MOOCs by collaborating valuable resources of these institutions, so that marginalised youth can fly across the pond. The universities need to step forward to take the MOOC under their wings. Short duration basic courses can be designed by professors. For long duration advanced courses, University mechanism plays a vital role. The university accreditation and job surety will tempt the students to register into courses.

India's national Open University IGNOU has an excellent role in this scenario. It can offer MOOCs to suit the requirements people of the entire country. Currently MOOC providers offer courses in foreign languages. The country can use IGNOU machinery to set off courses in regional languages of India. Distance education centres of various universities and state open universities across the country can also take up the project.

Universities or colleges in India can collaborate with companies or universities offering MOOCs, which may bring in new opportunities for students, teachers, academicians and universities. They may either make certain courses offered by MOOC provider's part of their curriculum or of credits using these platforms. Even they may use the Edx platform, which MIT plans to release in open source to post online courses at local level. Also, they may collaborate to translate some of the courses offered by MOOC providers into regional languages to enable wider reach of these courses, which may appeal to

local audiences. These measures will help in minimizing course delivery issues related to language and Internet bandwidth and ensure wider acceptability and reach of these courses. Instead of increasing more study centres under distance education, it would be reasonable to go for MOOCs. The shortage of teaching faculties in state and central universities can be addressed through launching few courses in the MOOCs mode instead of appointing ad-hoc faculty.

There is a responsible role for the Indian government in establishing standards for this new type of education, and for certifying institutions. Government of India can form policies regarding accreditation to MOOC courses.

In December 2013, Coursera announced a mobile app that permits users to enrol in courses, watch lectures, and complete quizzes all from a mobile device. This is a major step forward for MOOC access in countries like India where broadband coverage is still a problem. The Indian Institute of Technology Bombay (IIT Bombay) is the first college in India to join EdX, a MOOC provider, and to offer MOOCs. The partnership was created to meet a specific need in India, that is, to give training for engineering teachers. Microsoft Research India has done a pilot project with Visvesvaraya Technological University, Karnataka, for a MOOC-like experiment merging online education with classroom learning.

The above discussions show that MOOCs have a potentially greater role to play on the Indian Higher Education scenario. It will fuel institutional collaborations to a large extent. MOOCs will efficiently face the concerns such as regionalism, culture and geopolitics related to internationalization. It can also address the torments expressed by the Knowledge Commission regarding the establishment of new institutes of Higher Learning. As starting a courseware in MOOC would be much cost effective as compared to the establishment of a completely new University. Moreover such as new learning paradigm will allow the learners to acquire the knowledge at their own pace irrespective of the geographical constraints only at the cost of modest digital infrastructure which is almost been set by the way of National Knowledge Connectivity. One of the main mile stones set by the Indian HE system i.e. implementation of Choice based Credit System would be possible by hosting the courses on MOOC and clustering the institutes of higher learning for the credit transfer thereby offering the horizontal mobility to the learners. The fact that Indians are the second highest users of MOOCs points out the country's unbounded call for quality higher education. It is the time for India to bloom in MOOC models. However the modus operandi for the MOOC implementation in the Indian context is still in its infancy, but if done properly days are not far to realize the goal.

8. MOOVING BEYOND CONVENTIONALISM TO MOOC- CHALLENGES AHEAD

India is facing many challenges regarding the implementation of MOOC model. The country's technological infrastructures have to be developed more. Otherwise only the privileged few will have access to these educational alternatives, further aggravating the inequality of educational opportunity in India. Since Educational demands in India are highly diverse, it is a must to think how to meet these demands through MOOC while designing a MOOC course. There are several questions are to be answered specifically by educational thinkers and policy makers like

- How can design real-time translational technologies to convert foreign university classes into many regional languages of India?
- How can use existing college facilities to cope with MOOC model?
- Since internet bandwidth is too low in many regions of India, how can manage slow video stream difficulties? etc
- the role for accreditation, if any, and how it might be accomplished
- what are the conditions for successful participation can extend beyond those with broadband access and elegant social networking skills

MOOCs are also facing some general challenges issues. Those who wish to make frequent contact with instructors, MOOC might look like uneasy. Large number of discussion may be unfavourable to some of the participants. The responsibility of learning is solely rests on the part of the students. Lack of supervision may lead to academic fraudulent. One has to find measures to overcome issues like students hiring others to complete the course, plagiarism etc. Technical difficulties with computer and internet connection may be accident of birth. Since most MOOCs are free, they are facing a problem of low completion rates. Meyer (2012) reported that the dropout rates of MOOCs offered by Stanford, MIT and UC Berkeley were 80-95%.

Researches should have done to overcome these downsides while try to implement MOOCs in India.

9. CONCLUSION

Vision of Indian Higher Education is to realize India's human resource potential to its fullest in the education sector, with equity and excellence (Annual Report of Department of Higher Education, 2013). MOOC is one of the effective tools to actualise this vision ahead of the curve. Since India's GER in higher education is too small in comparison with other developing countries, the

country should integrate technological advantages like MOOC to flourish its higher education system.

MOOCs assure to open up higher education by offering accessible, adaptable, affordable and fast-track completion of universities courses for free or at a low cost for learners who are interested in learning. The development of *MOOC* model innovations shows a convergence of interests in social, economic and technology developments in education in a global context. MOOCs have the potential to play an important role in ensuring access to education for all and addressing the issues and challenges of an ever changing environment that needs new ways to deliver and access to Higher Education in the future.

Government of India should make sufficient arrangements to utilise these technological innovation for facing challenges experienced today in higher education sector. India's well known higher education institutions like IITs, IIMs, IGNOU, and other Universities have great roles to play in this movement. With the popularity of *MOOCs*, universities and colleges will need to rethink how to make their curriculum delivery models and courses truly adaptable and accessible. More flexible models and open approaches will encourage more mature students to participate in higher education, thus learning become truly lifelong learning. This will be a great advantage to strengthen the citizen of world's largest democratic country. Of course, MOOC is not a panacea for higher education in India, but it can be used as a potential instrument to resolve uneven qualities and lack of supply in higher education sector.

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