

DIGITAL INITIATIVES ONLINE LEARNING COMMUNITY TOWARDS MOOCS AND OER ON ENGINEERING EDUCATION

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ABSTRACT: On-line learning is the innovative perspective on the utility of Information and communication technology (ICT). The present age is accompanied with blended learning due to globalization. It demands the crating of greater number of heterogeneous groups, resulting cultural exchange. Globalization has resulted in communities that are more heterogeneous and fostered inter-cultural exchange. The MOOCs (Massive Online Open Course) as a new one of these learning modes has emerged as a new revolution with rich opportunities, especially for technical education.

Keywords: MOOCs (Massive Online Open Course), OERs (Open Educational Resources), Learning Styles, Education, E-Learning, Technology enhanced learning system, ICT (Information and communication technology)

Introduction: Education is widely considered as an effective instrument for the development of countries through the fight against ignorance and illiteracy, the diffusion of science and knowledge, as well as the improvement of the level of skills and competences in each country or nation, which has made the education system a measure of the progress of peoples and nations. Today, the world is moving towards a new education system, based on the terms of a new culture dedicated to values, concepts of globalization, openness, partnership, and competition.

On-Line Learning in Transition: Meaningful online learning can be achieved using a combination of traditional teaching and learning model. A teaching model based on formal lessons utilizing e-books other media, an informal contact model where students are getting together to share ideas, social activities and cultural exchange is on agenda.

On-Line Learning Activities: The learning process is carried out through following activities in three procedures:

1. Planning the activities
2. Executing instruction
3. Evaluating activities

On-Line Learning Community(OLC): Learning is facing new challenges in the technology age and on line learning communities are one means of coping with those challenges. By accessing the online learning community, students can acquire a wide range of knowledge and information through adaptive methods using web based tutorials and assessments from the online sources. Technology influences society and hence the skills are expected to developed in teaching learning. We can think of learning as a process that takes place at the intersection of social and technological system.

Frame work of On-Line Learning Community (OLC):

Online Teaching: The Interaction occurs between teacher and students in the forms are through online lectures online symposium or teacher-oriented dialogue.

On-Line Learning Tutorials: tutorials are held to give feedback by the interactive system. Guided tutorials, drill and practice system are more teacher and system oriented.

Online Assignments: Assignments are done through online platform with web course authority tools, tutors develop assignments, web quests or assessments very quickly and comfortably.

Online Discussions: The learning method facilitates group learning and interaction among. Work in group leads to the learners becoming critical reflectors.

Online Collaborative Learning: Learner's motivation towards participation in the process of learning, the effectiveness of learning activity and the extent of collaboration in promoting perceived as well as cognitive learning is supported through on line collaborative learning.

Perspectives of On-Line Learning Community: The concept of community has been used in relation to characteristics of education and learning located on internet. Online learning community is categorized in to three types:

- Professional OLC
- Educational OLC
- Internet OLC.

Digital Initiatives Knowledge Based Society: Education is recognized as a recognized a major drive for economic competitiveness in an increasingly knowledge driven global economy than ever before. The imperative for several countries it is raise higher level employment skills, to sustain a globally competitive reach base and to improve knowledge dissemination to the benefit of society. The existing knowledge based society with knowledge economy is powerful driver for change in the perspective and functioning of the education system.

National Knowledge Commission (2009) clearly states "there is a clear, almost unanimous, view that higher education needs a systematic overhaul, so that India can educate much larger number without diluting academic standards, indeed this is essential

because the transformation of economy and society in the 21st century would depend, in significant part, on the spread and the quality of education among our people, particularly in the sphere of higher education. It is only an inclusive society that can provide the foundations for a knowledge society.”

Introduction to MOOCs:

Today’s most advanced economies are based on the greatest availability of knowledge. Comparative advantage is increasingly determined by the complete use of knowledge and technological innovation. A massive wave of opportunity has knocked the door of formative education in the form of MOOCs which stands for Massive Open Online Courses. The revolutionary step towards providing versatile education has yielded some impressive results. The term MOOC was derived in 2008 by Dave Cornier of the University of the Prince Edward, Island and Bryan Alexander of the National Institute for Technology in Liberal Education. MOOCs are of a very recent origin in distance education, started somewhere around mid of 2011. They are called ‘massive’ because they are available for the masses. These courses can be fully taken online aimed at unlimited participation and open access via the web

Massive Open Online Courses (MOOCs) present new opportunities for teaching and learning. To make the most of them, technical education institutions are exploring and experimenting with blended teaching methodologies that aim at integrating MOOCs as a complement in the formal curriculum. Although one of the most common strategies of this complementary use of MOOCs is the “flipped classroom”, the literature also reports other ways of reusing and integrating MOOCs into formal education. One of these MOOC-based models is to use MOOCs as a complementary resource for remedial courses. Therefore, this model suggests using MOOCs to help post-secondary students acquire and review the knowledge needed for getting into the university, or to continue their technical education studies.

The universities and colleges are rapidly experimenting with online learning but the question is where they are using a coherent strategy for the same or running downside risks. There is a large possibility that MOOCs can improve the quality of pedagogy the MOOCs allow the learning industry to un-bundle courses to be re-bundled again and taught as internal programmes. Figure 1 shows about the clear picture of MOOCs.

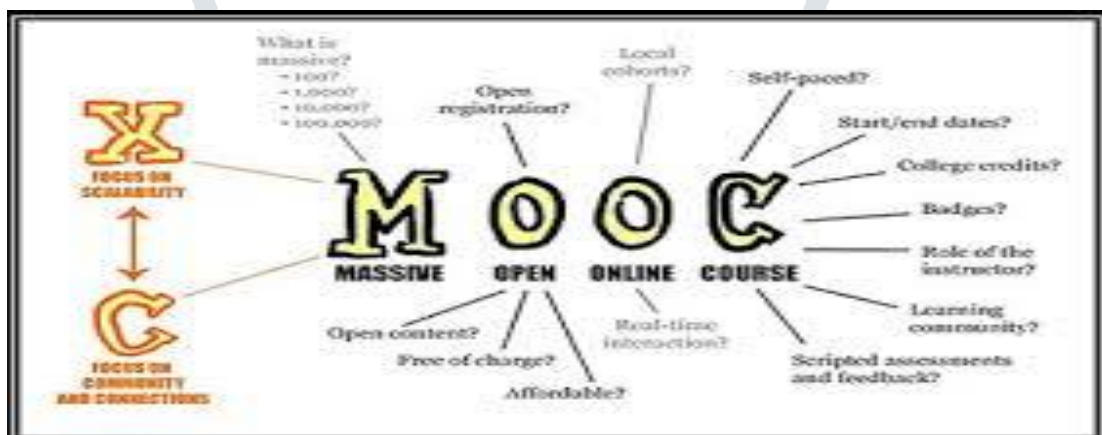


Figure 1. Massive Open Online course (MOOCs)

Types of MOOCs: MOOCs are broadly classified into two types C-MOOCs and X-MOOCs.

a) **C-MOOCs:** They are based on connectivism. It is a creation for emphasizing connecting learners called as connectivist MOOC and build upon the idea and platform originally visualised by George Siemens.

b) **X-MOOCs:** They have their background in the evolution of open courseware and open educational resources. X-MOOCs are generally offered by universities in collaboration with a commercial organization/company whose aim is to gain profit. X-MOOCs are online versions of traditional learning formats ie, lecture, instruction, discussion etc.



Figure 2. MOOCs Open Course

MOOCs as a complement in on-campus courses there is consensus in the literature that technologies can enhance the learning and teaching of mathematics, opening windows on learners’ knowledge development by means of interactions with digital tools

that mediate learning trajectories. However, there are challenges involved in balancing the use of mental, paper-and-pencil and digital tools in both assessment and teaching activities and MOOCs could be a powerful resource for this purpose.

From the cMOOCs to the xMOOCs, including the hMOOCs, the flipped classroom pedagogy model that uses MOOCs, and the remedial pedagogy with MOOCs, higher education institutions are working and studying different models to extend their curriculum and offer new opportunities for students. Most prior studies have analyzed the use of MOOCs to support the flipped classroom strategy, where the MOOC is used as a driver in the classroom experience. For example, some publications by Eric Mazur, one of the main references in this strategy worldwide, suggest that the flipped class results in significant learning gains when compared to traditional instruction.

Role of Massive Open Online Courses (MOOCs) Platform:

Motivation for Development of the MOOCs As digitization transforms how knowledge is produced and consumed and how learning takes place, higher education institutions are driven to explore innovative approaches to the design and development of learning and learning environments. As an innovative approach to educational change, MOOCs are shaping the new online learning environment and, to some extent, are being used to capitalize on the affordances of digitization. Since late 2011, beginning with the emergence of MOOCs from institutions such as Stanford, Harvard, and MIT, they have attracted widespread media attention and globally.

By the end of 2013, most top universities had started to offer some sort of MOOC (massive open online course). Now, we are starting to see the MOOC product move into both the corporate and the private realm. Companies like Google and Tenaris are using MOOCs for training their employees, MongoDB is educating developers through the MOOC medium and thousands of private instructors are teaching classes on sites like Udemy. The following is an assessment of five popular free MOOC (and MOOC-like) platforms.

	Max. Class Size	Brandable	Custom Analytics	Monetization	Mobile	Hosting
	300,000	✓	✓	✓	✓	Self-Hosted
	10,000	✓	✓	✓	✓	Self-Hosted or 3rd party
	Unlimited	✗	✓	✗	✓	Hosted
	Unlimited	✗	✗	✓	✓	Hosted
	Unlimited	✗	✗	✗	✓	Hosted

EdX:

EdX is an open-source platform offered by edX.org. It is the same platform that universities such as Harvard and MIT use to offer courses to 100,000+ students. It was released as open source in March 2013, and the goal was to act as the WordPress for MOOC platforms, allowing users to use plug-ins to expand the core functionality. EdX has a fast, modern feel, with the ability to accommodate large enrollments.

EdX is suitable for organizations that want a modern, flexible, robust course-management platform. Although it is open source, investment will need to be made in both installation and some maintenance. But the return will be a platform that can provide best-in-class content to thousands of students.

MOODLE:

Moodle is an open-source learning management system (LMS) that allows users to build and offer online courses. It was built for traditional online classrooms rather than MOOCs, which attract a large number of students. It tends to be easier to install than edX, and there are hosted or one-click install options available.

Moodle is suited for organizations that want a full-featured, customizable LMS. The platform offers more than EdX in terms of educational tools, analytics and SCORM compliance. The trade-off is that the platform is over 10 years old. The number of configuration options can be daunting, and system performance suffers with larger numbers of students.

COURSESITES BY BLACKBOARD

CourseSites by Blackboard is an exceptionally robust platform. It has most of the features that Moodle has, including extensive teaching tools, reporting features and SCORM compliance. It is also cloud-based. You can set up a course in minutes and never have to worry about maintenance or upgrades.

UDEMY (FREE VERSION):

From the beginning, Udemy has specialized in the private MOOC. Think of it as the YouTube of MOOCs. Instructors can build and host their own courses on the platform and then offer them to users for free or for a fee.

Udemy is for individuals who want to easily build basic courses and monetize them. The platform is full of coders, photographers, designers and other specialists who offer their knowledge in the form of an online course. Udemy's most distinct

strength is its base of 2,000,000 registered students. When you build a course on Udemy, you are able to reach this pool of potential students.

VERSAL (FREE VERSION)

Versal is an intriguing new platform. Its major strengths are a sleek, intuitive user interface and a robust drag-and-drop functionality. A user can sign up for free and then build a course that includes mathematical expressions, image drill-downs and many more widgets, all without any coding knowledge. Users can also embed their published courses on other websites, such as personal blogs.

Canvas

Contrary to other solution like EdX and Coursera, Canvas isn't limited to prestigious universities. It contains courses from a much wider selection of less renowned universities. This makes the courses somewhat more accessible and less intimidating if you want to jump in a field you don't know anything about.

ALISON: ALISON is consider to be the first MOOC. It is a non-profit world's leading provider of free online courses with certificates providing 600 courses to 4 million online learners registered worldwide. A mission of ALISON is to enable people anywhere in the world to learn and get certified new skills among hundreds of free courses.

Coursera: Commercial company initiated by USA professors Andrew NG and Daphne Koller from Stanford University in 2013. It is considered to be the largest MOOC provider. It collaborates with top universities and organizations in the world to offer free courses online for anyone with the aim to make world-class education accessible to learners. Coursera technology enables their associates to teach millions of students.

Franco Yainpez has identified three major barriers to access MOOCs.

- a) **Technological barrier:** MOOCs are designed to work on a computer with the broadband internet access that may be a barrier in many developing countries.
- b) **Linguistic barrier:** Most MOOCs are provided by English, which everybody in developing nations may not read and or speak and it limits the access for people who are not competent in English to take an online course.
- c) **Prior knowledge:** Some MOOCs expect the students to possess prior knowledge in order to grasp advanced concepts.

MOOCs on Engineering Education:

MOOCs' engineers can exploit diverse results and techniques from AIED to improve MOOC platforms and create new opportunities for AIED research. Computer scientists working in fields such as educational data mining and learning analytics find MOOCs particularly interesting. Not only can they create truly "big" learning-related data from MOOC courses (provided that the dropout rate is suitably managed), they can also provide a very heterogeneous student body, because of the open nature of MOOCs. These students can interact in ways that aren't further structured by established social contracts and roles; therefore, researchers may explore social network analysis methods on MOOCs.

Methods from educational data mining and learning analytics can in general be applied for knowledge creation (learning more about learning and interaction, and relevant technologies). They can also serve applied purposes: supporting students, teachers, educational institutions, and systems. In light of the mentioned attrition rate, computer scientists can use another rather obvious applied challenge—automatically identifying students at risk of failing. They can use similar techniques to "nudge" students who need it, and provide course- or cohort-based monitoring.

These classes of MOOCs can also be part of a hybrid model. For example, many developing countries have a large unmet need for skilled IT professionals, where the learning need involves well-defined technical skills. The most recent MOOCs already offer several attractive options for this situation. Employers can use MOOCs to deliver content and a basic formative assessment to potential employees. The employer can complement this by nurturing learning communities. They can conduct summative assessment that determines employment options, which is a significant motivator for students.

Features of MOOCs in Education: There is no doubt that MOOCs have shown its scale of outcomes that have been hugely positive which needs to be thoroughly evaluated and regarded and considered by faculties, administrators and policy makers.

not everyone is as optimistic about the potential of MOOCs as was Sebastian Thrun, but they may have a place in the hallowed halls of higher education. The MOOCs companies and investors should be more suitable in their own ways and not act as typical business people or die hard educationists because they need to be a mixture of both and should stop trying to sell their products thing they would be the ultimate way out for all the education problems.

Open Educational Resources (OER): Today's most advanced economics are based on the greatest availability of knowledge. Comparative advantage is increasingly determined by the competitive use of knowledge and of technological innovation. Education is recognized as a major drive for economic competitiveness in an increasingly knowledge driven global economy. The development of MOOCs supports not only staff skills development, but also stimulate capacity building. There are important advantage on Open Educational Resources (OER) and MOOCs development.

Some of the OER tools developed in India are National Programme on Technology Enhanced Learning (NPTEL), Ekalavya, Amrita Interactive e-learning (A-View) and E-Grid and National Repository for Open Educational Resources (NROER). MOOCs are going to be revaluation in the field of education. An India specific MOOCs platform "SWAYAM" (Study Webs of Active Learning for Young Aspiring Minds) indicating self-learning was launched for completely free of cost.

IIT Mumbai has planned MOOCs for computer programming, where as IIT Khargpur prepared a blue print for the National E-Library project that will collect, preserve and disseminate intellectual output and provide free access from primary to higher educational level. The potentially significant role of MOOCs can play in the large context of lifelong learning and capacity building in the education system.

Conclusion: The MOOCs are the future today's learning. They have made the education easily accessible to anyone anywhere anytime around the globe and made people's life more improved by providing flexible and quality learning as it was earlier. The education system managed through advanced technologies and online studies will definitely help India to nurture its growth. MOOCs is invasively burgeoning among Indians classrooms a reality. For Indians who have a thirst for quality based western education, MOOCs are proved exemplary in this direction. Professional development is possible through learning community. Teachers work collaboratively within a framework to support each other through shared planning and curriculum development, accessing resources and provide feedback for teacher in a professional learning community. The digital content will help to online learners teaching should find a suitable pedagogy which will be reflective and accountable in this content.

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