RESEARCH REVIEW JOURNALS
Volume-03
Issue-11
November -2018

ISSN: 2455-3085 (Online)
RESEARCH REVIEW International Journal of Multidisciplinary
www.rrjournals.com [UGC Listed Journal]

# Massive Open Online Courses: EdX, Coursera and Udacity, A Comparative Study

[1]Dr. Leena Jain & [2]Ramandeep Kaur

*[1]Professor & Head-MCA, Global Institutes of Management. & Emerging Technologies, Amritsar, Punjab (India)*
*[2]Research Scholar, IKG Punjab Technical University, Jalandhar (India)*

**ARTICLE DETAILS**

**Article History**
*Published Online:* 10 November 2018

**Keywords**
E-Learning, Massive Open Online Course (MOOCs), Edx, Coursera, Udacity

**ABSTRACT**

The significant breakthroughs in the world of technology have resulted in boom of highly sophisticated electronic devices and communication tools. Interestingly, this technology revolution has not only affected business, training and military sectors but has also taken academics into its stride. It has removed the barriers of space and time thereby delivering knowledge anytime anywhere. Distance education, learning-management systems and the opportunity to collaborate with research partners from around the world are just some of the transformational benefits that the academicians are embracing. MOOCs are one such significant transformation that characterizes the 21st century education system.

The present paper is an effort to analyze and compare three of the world's most popularly used MOOCs i.e. EdX, Coursera and Udacity that provide courseware to engineering students across the globe. This paper compares these three platforms of e-learning based on parameters like the content, pedagogical support and assessments. This paper is an effort to draw from best practices from world class MOOCs and serve as guidelines for the budding e-learning portals.

## 1. Introduction

The e-learning portals or more specifically the Massive Open Online Courses (Moocs) are the latest fad in the education technology. More and more people are getting enrolled into these portals every year with the objective of learning a new skill or updating their professional nuances. As per the class central report [1] nearly 81 million learners across the world are already enrolled with different Moocs available in the e-learning industry. The report also highlighted that over 800 universities world over have initiated their own Moocs, raising the total number of Moocs to 9400. New courses are continuously being created and added to these portals to cater to the requirements of different disciplines. This number is further likely to proliferate as the UGC's regulation[2]now authorizes accredited higher education institution in India to offer certificate, diploma and degree courses in an online mode.

The e-learning portals are basically the virtual classrooms where the students learn through videos, reading materials, lectures, projects, quiz, assignments, teacher and peer interactions, etc. This learning process necessities the portal to have meaningful and engaging content which is easily measurable, accessible and scalable [3]. A large number of studies have been conducted to identify parameters for a successful MOOC design, Yousefet. al [4], however argued that all design parameters mentioned in the literature cannot be applied to MOOCs due to the distinctive features of MOOCs. He explored the successful MOOCs design factors on the basis of pedagogical and technological perspectives and backed it up with an empirical study.

With a plethora of technology features and authoring tools offered by MOOCs, It becomes important to explore the existing portals with respect to their information and functionality to enable better and enhanced learning designs [5]. Thus this paper attempts to explore the working of three e-learning portals i.e Coursera, Udacity and edXin terms of its content, pedagogical support and assessments for deeper understanding of course creation, management and its success amongst the learners.

## 2. Content

The design, development and delivery of the contents form the heart of a course, so efforts should be made to make it clear, well thought out, concise and finely aligned with the learning objectives. The learning resources comprise of online courses, learning manuals, video lectures, etc. The content matter of these learning resources should provide adequate coverage and must be relevant, accurate, reliable and up to date. It is a well-known fact that students do not like to read too much of text so constant efforts must be made to enrich the curriculum with easy to understand concepts. The structure and delivery of the content must also enable the students to easily comprehend the subject matter of the course. Illinois Citl [6] pointed out that the presentation of the content has a strong impact on student's success and satisfaction level. So it is extremely important that the e-learning course content must convey knowledge and at the same time engage the learners throughout the course for better retention. The design of the learning resources has also been a research issue for years. Jonassen [7] suggested the designers to identify the information needs of the learners to completely understand the problem. Although the content delivery differs from course to course but there are certain best practices that can ensure quality content and better learning opportunities. They are as follows:

- Logical organization of the content[8][9]: To make it easy to understand, follow and recall.

- Consistent delivery of the content [10][11]: To provide successful navigation.
- Enriching the content with anecdotes, illustrations , videos[8][11]: For enhanced user engagement.
- Concise and relevant details[8][11] : To emphasize on what the student exactly needs to know without including unnecessary elaborations.
- Visual Presentations[8] :To support greater user engagement and retention.
- Modularity [8]: To allow breaking of content into smaller segments and thus enabling greater attention by the learners .

In order to provide 'quality content', different moocs have tied up with various top notch universities and organizations across the globe. For example coursera partners with 166 universities across 28 countries to offer as many as 2859 courses[12]. The coursera course contents are created by the joint efforts of the instructor, teaching staff and other institutional resources such as instructional designers[13].

Edx [14], founded by Harvard University and MIT in 2012, collaborates with 130 global partners to offer a rich variety of 1900 online courses in fields of computer science, languages, engineering, psychology, writing, electronics, biology, marketing, humanities, data and statistics, etc.

Udacity offers about 60 courses in the domain of computer sciences and programming. What makes it different from other portals is its unique courses which are designed keeping in mind the industry needs. Thus the course content helps the learners to gain proficiency in a skill that is 'in-demand'[15]. Udacity's rigid course structures match closely to a university's semester system. Most of the courses provided by it are on term based scheduling with specific start and end dates. The students are expected to complete the course before the end date. An extension of about four weeks is granted in case if the student fails to complete before the term ends. Beyond 4-weeks the learner looses the access to the content and needs to rejoin the course after paying the due fees for the next term[16].

### 3. Pedagogical Support

The Pedagogy or the way how learning takes place in an online platform is the most fundamental pre-requisites for the successful execution of e-learning. In reality, however, this is the most ignored aspect in the implementation of e-learning[19]. Most of the MOOCs follow almost a similar pedagogical methodology making use of content based lectures, instructor led sessions, videos, quizzes, peer or self assessments, collaborations through discussion forums, etc. However they vary in terms of their objectives and content structures [18]. The following pedagogical concepts have been claimed to have ensured an effective learning experience: Mastery Learning [20] , peer assessments [21] , retrieval learning [22] and active classroom learning [23]. These pedagogical concepts lay the foundation for learning in Udacity, Coursera and Edx environment. Coursera provides the broadest array of learning pathways. The video lectures of Coursera are the fundamental teaching tool that lasts forless than fifteen minutes and enable the learners to pause at specific points to assess their learning[24]. These interactive videos include subtitles in over thirty languages. The learners can easily re-watch the videos and download them to view them in an offline mode. They can even download the video transcripts. Apart from this, the users can participate in community discussion forums and edit wikis as part of collaborative learning. Coursera also has an active presence in social media. The platform actively engages with the learners through blogs, facebook, Google+ , twitter and linkedln.

Udacity and edx courses have setup meet up sites through which the students can arrange study meet ups with other geographically co-located fellow students[25][19].

The popularity of a MOOC is determined by many factors, one of the most prominent being the pedagogical base of the platform.[26] There are growing concerns with respect to the pedagogy followed by the MOOCs and the learning outcomes delivered by them .Also issues have been raised for the requirement of new pedagogies for a quality learning experience [27]. There is indeed a lot of research centered around learning issues to understand the learners to evolve suitable learning methodologies for them. Edx is one such platform where one of the core missions is research on pedagogy[14]. In fact, Edx along with coursera have developed platforms that monitors the students' click responses, time taken to complete tasks while they use the content, submit assignments and interact & engage in discussion forums. This enormous data facilitates research and development in the field of student learning.

Udacity's teaching methodology includes lectures, videos, quizzes, assignments and project work. In fact, Udacity is primarily known for its project based learning approach, emphazing on 'learning by doing', where the learners learn by completing the projects[30]. The pedagogical emphasis for the free courses is 'self study' while for the paid ones, a trained coach is available to help the user plan course goals and assist them throughout the course.

Udacity also very innovatively engages its users through various types of competitions for example :Challenge to world's first open source self-driving car[29] , winning price of $10,000 during IJCAI2017 conference[28], Global AI competition for students[15],etc

### 4. Assessments

Most of the MOOCs test the learners on the basis of quizzes, objective type questions such as multiple choice questions, matching exercises or true /false. Some of them also use subjective type questions based on report writing, essay writing, comparisons, analysis, etc. The decision to choose the assessment type basically depends on the learning objectives of the course. Mostly the assessments are done either using the automated grading tools or through peer reviews. Peer assessments are much utilized in Coursera, where the students are organized into small anonymous groups for grading each other's assignments. A random group size and complete anonymity in the group makes grade inflations quite un likely[31]. Although the peer grading is a much debated topic but the e-learning platforms continue to

 

use them due to lack of adequate resources to mark thousands of assignments. A good scoring rubic (a set of standard guidelines),well aligned with the learning outcomes serves as a guide during the peer reviews. Automated grading tools are generally used for more straight forward objective type questions. Some assessments also demands authenticity checks to determine whether the test taker is the student himself. For example, the Coursera and Udacity courses that are offered for credit come with a requirement of final examination that needs to be proctored and the identity of the test taker is authenticated either through the supervisor at the center or through a webcam.

Udacity depends upon humans and not bots to grade the projects. With the success of nano degree programs, Udacity seeks support of agile talent, a team of 'on-demand' reviewers, who timely evaluate and give feedbacks on the projects submitted by the students [32].

## 5. Conclusion

The relevant and adequate content taught by professors of esteemed universities, teaching methodology and the assessments are one of most critical factors for the success of any e-learning portal. The paper provides an overview of how the three most popular MOOCs: Coursera, Udacity and edX are managing these aspects in their respective e-learning portals to attract more user enrolments and to deliver satisfactory learning outcomes. The paper provides rich guidelines for the budding e-learning portals for their successful implementation and high user satisfaction.

## References


1. Dhawal Shah (2018),https://www.class-central.com/report/mooc-stats-2017/accessed on August 18,2018.
2. UGC(2018),http://pib.nic.in/newsite/PrintRelease.aspx?relid=179532accessed on August 15,2018.
3. J. R. Drake, M. O'Hara and E. Seeman(2015), "Five Principles for MOOC Design: With a Case Study", Journal of Information Technology Education: Innovations in Practice, vol. 14, pp. 125-143
4. Yousef, A. M. F.; Chatti, M. A.; Schroeder, U.; Wosnitza, M. (2014), "What Drives a Successful MOOC? An Empirical Examination of Criteria to Assure Design Quality of MOOCs", In: Proceedings of the 14th IEEE International Conference on Advanced Learning Technologies, pp.44-48.
5. Ivanova, M.(2016), "Technology Landscape in MOOCs Platforms",IEEE
6. Illinois Citl (2018),http://citl.illinois.edu/citl-101/online-strategy-development/develop-or- revise-an-online-course/online-course-in-a-box/designing-your-course/delivering- content/delivering-content-online, accessed on August 15,2018
7. Jonassen, D. (1998), "Designing Constructivist Learning Environments". In C.M. Reigeluth (Ed.), Instructional Theories and Models (2nd ed.). Mahwah, NJ: LawrenceErlbaum.
8. Moore, Emily A.(2013), "Adapting PowerPoint Lectures for Online Delivery: Best Practices", Faculty Focus,online-delivery-best-practices/
9. Simonson, M., & Schlosser, C.(Eds.).(2009), "Quarterly review of distance education" (Vol. 7).IAP.
10. Ragan, Lawrence C.(2011) "10 Principles of Effective Online Learning: Best Practices in Distance Education". FacultyFocus.
11. Dykman, C. A., &Davis, C. K. (2008). Part one-The shift toward online education. Journal of Information Systems Education, 19(1),11.
12. https://www.coursera.org/about/partners/us
13. https://moocs.unige.ch/files/6814/6720/2377/Planning_a_Course_coursera.pdf , accessedon August 18,2018.
14. https://www.edx.org/
15. Udacity Review : A look At Nanodegrees and CourseOfferings", https://coderseye.com/udacity-review/ accessed on August,2018
16. Class Central (2017),https://www.class-central.com/report/udacity-2017-review/accessed on August20,2018
17. Govindasamy, T. (2002), Successful implementation of e-learning;pedagogical considerations, The Internet andHigher.
18. Lebron, D., and H. Shahriar (2015). Comparing MOOC-Based Platforms: Reflection on Pedagogical Support, Framework and Learning Analytics. 2015 International Conference on Collaboration Technologies and Systems (CTS),167–74.
19. P. Agrawal, A. Kumar and A. Agrawal(2015), "Massive Open Online Courses: EdX.org, Coursera.com and NPTEL, A Comparative Study Based on Usage Statistics and Featureswith Special Reference to India", in CALIBER 2015: Shimla,HP. India: INFLIBNET Centre, ISBN: 978-93-81232-05-7, pp.390-402.
20. Bloom, B. S. (1984). The 2 sigma problem: The search for methods of group instruction as effective as one -to-one tutoring. Educational Researcher,Vol. 13, No. 6 (Jun. -Jul., 1984), pp. 4- 16 Published by: American Educational Research Association. Article Stable URL:http://0-www.jstor.org.bianca.penlib.du.edu/stable/1175554
21. Robinson, R. (2001). Calibrated Peer Review™ an application to increase student reading& writing skills. The American Biology Teacher 63(7):474-480.doi:http://dx.doi.org/10.1662/0002
22. -7685(2001)063[0474:CPR]2.0.CO;2
23. Karpicke J. D., & Blunt, J. R. (2011). Retrieval practice produces more learning than elaborative studying with concept mapping. Science 11 February 2011: Vol. 331 no. 6018pp. 772-775 , DOI: 10.1126/science.1199327, Retrieved from http://www.sciencemag.org/content/331/6018/772.abstract
24. Deslauriers, L., Schelew, E., &Wieman, C. (2011). Improved learning in a large-enrollment physics class. Science 13 May 2011: Vol. 332 no. 6031 pp. 862-864 DOI: 10.1126/science.1201783
25. Mihai, O., Vlad, M., &Radu, V. (2015).Technical Analysis of MOOCs. TEM Journal, 4(1),60-72.


 