Ilkogretim Online - Elementary Education Online, 2020; Vol 19 (Issue 4): pp. 5772-5779
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2020.04.764981

Proposed Model For The Solution Of Challenges Perceived In Massive Open Online Courses (Moocs)

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Abstract:

In today's world e-learning have an important role in the field of education. Massive Open Online Courses (MOOCs) has key role to facilitate e-learning to the learners from the experts worldwide. MOOC provides platform for the people who are interested in learning and experts who seek to facilitate the learning. They are extremely helpful for exploring people interests. They provide great courses to the fields that we wouldn't be able to access otherwise without the need to pay single pie. MOOCs attract a lot of learners from all around the world but their course completion rate is so low. This paper investigates the MOOCs system by reviewing the available literature and find out various challenges perceived like increased dropout rate, feedback, isolation of students, expert's blind spot, students' engagement techniques etc. in MOOCs and suggesting proposed models for the solution of these challenges.

Keywords: MOOCs, Adaptive Learning, Online Course, E-Learning, Augmented Reality, Gamification.

1. INTRODUCTION

MOOCs term was first coined in 2008 for an open online course by the University of Manitoba in Canada. MOOCs are one of the popular E-learning systems that are becoming accepted tools for teaching and learning. The E-learning systems provide a platform for using computers to improve Education [1] [2]. There are many advantages to the online course approach, including the wide flavour of degree programs and classes offered, flexible study times, and the ability for students to balance between a career and education [3]. The main purpose of MOOCs is to connect the students from different geographical areas to provide quality education. Around world more than 58 million students have been registered with MOOC courses. More than 700 Universities providing more than 6800 MOOC courses around the world. These stats show the popularity of MOOC courses. There are other facts which shows popularity of MOOC courses like 76 million users registered in Coursera, 35 million in Edx, 14 million in FutureLearn and 16 million in Swayametc [4].

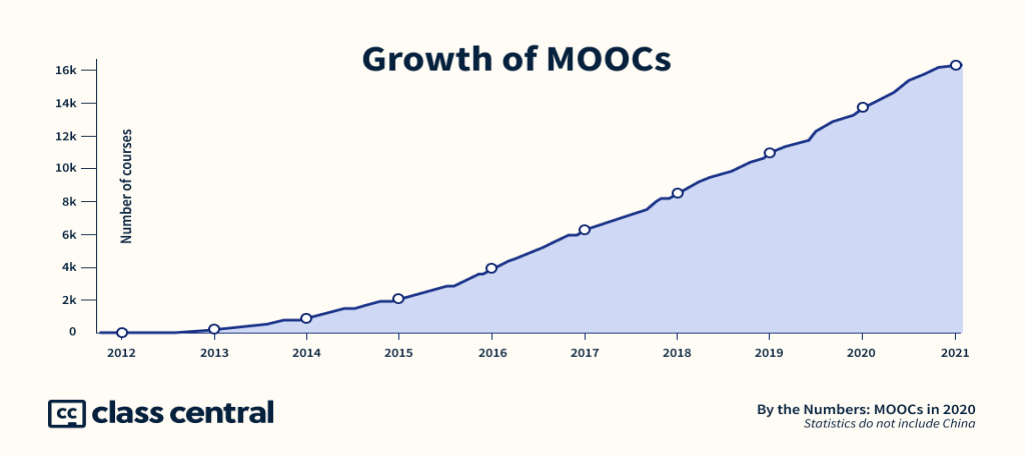

Fig 1: Growth of MOOC Courses with respect to Years[4]

There are various promises made by MOOCs like courses are from world top universities, it's free of cost, learn from the professors who are famous in worldwide, high quality of lectures, achieve mastery via interactive exercises and collaborate with a worldwide community of students [5].

Indian Government also started project named SWAYAM and NPTEL to provide MOOC courses which are getting popular day by day[6].Despite the popularity of MOOCs worldwide there are a lot of challenges faced by MOOCs like increased dropout rate, feedback, isolation of students, bridge courses, expert's blind spot, overcrowding, language barriers, no student-teacher interaction, participants heterogeneity and quality assessment of learning. In this paper we will discuss various challenges confronted by MOOCs. We will also propose some models for their solutions.

2. SEGMENT'S OF MOOC

This is the main promise of MOOCs to provide quality contents. Quality of contents creates bond between learners and learning environment. Content must be related to the learning objectives otherwise learner can end up learning. Content can be presented in three ways a) Augmented Reality b) Adaptive Learning c) Gamification. Augmented Reality provides interaction between virtual and real objects which helps learners to understand the real-world objects problems by using virtual objects. MOOC courses are adaptive to the learners. Adaptive Learning provides personalised learning experience to the learners with respect to predefined courses to the students. Using various gaming elements, it becomes easy for the learners to understand the concepts very easy. Gamification used to create the interest of learners by adding gaming elements [7].

There are mostly two types of technologies to deliver contents like a) Collaboration Tools and b) Web and Media Servers. Collaboration Tools composed of Synchronous Technologies and Asynchronous Technologies. Synchronous technologies include virtual classrooms, chat, audio and video conferencing, shared whiteboard, application sharing and Online meeting tools. Asynchronous technologies include like electronic email and Listserv (which is used for subscription purposes). Instructional Strategy refers to the future plans of courses before launching like how course could be taught, what will be the objective of course and how to effectively use all resources etc. A nice learning MOOC course not only share information but also fascinates its learners.

Learning pedagogies defined as learning design that incorporates effectiveness of teaching, values and learning, educational quality and assessment activities supported by technology.

Fig. 2: Different Segments of MOOC

3. VARIOUS CHALLENGE CONFERENTED BY MOOC'S

Accreditation and Certification of Students

According to National University Technology Network, there is no such body which accredits the certification of MOOC courses. So that students don't believe that their course will be validated in future. It's is major challenge to build the confidence of the students towards the MOOC courses. Now these days, few organizations that provide MOOC courses they provide paid certification to the participants. But these certifications are not globally accepted.

Increased Dropout Rate

There is no doubt in that million students were registered in MOOC courses every year. This shows the popularity of MOOCs but there is other side of MOOCs completion rate which is below 13% which makes it miserable [8], [9]. There are various reasons of increased dropout rate like no real intention to complete, Course difficulty and lack of support, Lack of time, Bad Experiences, Expectations, Lack of digital skills or learning skills, Starting Late etc. Now these days there are a lot of research is going on the prediction of dropout rate. By predicting dropout rate some recommended measures can be taken [10].

Learning Quality and Learners Performance Assessment

As quality education is the primary goal of MOOCs. In MOOCs there are three aspects of quality a) quality in expert or tutor b) quality of course and c) quality of the system which manages MOOCs. All of these include faculty support, learner support, curriculum development, instructional process, instructional design, technology and assessment and evaluations. All of MOOC courses provider don't able to manage learning quality so there is quality gap is there. This is an important challenge faced by MOOCs [11].

Learners are an important part of MOOCs because MOOC course popularity depends on how much learner's registers for it. In most of the MOOCs there is no learner's real time performance assessment. Learner's real time performance assessment creates interest

of learners towards course. So, there is need of real time learner's real time performance assessment in MOOCs.

Long Term Administration and Oversight

As we all know that MOOCs is open and free for all learners but the cost to the institutions that provides MOOCs is high for example Edx charges $250,000 for per courses and additional $50,000 fee each time when course is offered. This is not a small amount if any persons want to launch its course into these MOOCs platforms like Coursera, Edx etc. They charge so much because MOOC courses requires long term administration and oversight. Maintaining quality needs long term administration and oversight. So, this is also major challenge in the way of MOOCs Success [12].

Ethical and Privacy Issues for Learners Data

The organization who manages the MOOC courses have huge amount of data related to the student's personal information, faculty personal information and copyright data of various universities who provides the MOOC courses [13]. This data is distributed to the various bodies like university who provide MOOC courses, third party and the body which provide all MOOC courses like Coursera, Edx etc., so there is always ethical and data privacy issues are there. We suggest that university's legal team must be consulted before students and faculty data is collected for prediction or analysis and before the permission give to third party to access the data and full consideration is also given to the ethical issues related to the learners [14].

Overcrowding

It's a positive sign that millions of students are registered with MOOC courses. However, it raises number of issues like registration, learner's progress tracking and management of courses. So, we need a lot of resources to handle such a large number of students. More than thousands of students registered for single MOOC course and there are more than 6000 courses available, to manage the resources for huge number of learners is a complicated job. So overcrowding is the critical problem faced by MOOC courses providers [4], [15].

Feedback and No Student Teacher Interaction

In traditional classrooms, the individual feedback is an important part of class which motivates students in the engagement of their studies. Proper feedback and response interaction between students and tutors plays an important role in commitment to retaining and enactment. From these interaction students learns in better way and avoids future mistakes. This is not possible in MOOCs where automatic feedback is done through quizzes or interactive. Because of lack in automated feedback system in MOOCs students do same mistakes again and again. It is major challenge in MOOC courses to make the automatic feedback system more realistic [16].

Isolation of Students and Student Engagement Techniques

Learners or students are important part of MOOC courses. There is no doubt in that MOOCs connects learners from worldwide from different geographical areas. But there is no way of communication between students like in real life classrooms. This is main challenge in MOOCs how to connect learners with each other so that if they are

appearing in same course, they can discuss their problems with each other. An ideal MOOC courses learning environment must resembles with real life classrooms environment where learners can work together. Some MOOC courses providers started to working on it to bringing learners together for example Udacity started Discussion forums, Coursera is working on learning hubs, NovoEd allows learners to take course in groups etc. Connecting learners is still a challenge for MOOCs industries[17].

Expert's Blind Spot and Bridge Courses

In MOOC courses whenever any learner joins that course there is no system to check whether the learner have the basics knowledge of that subject or not. When an expert give lecture on MOOC courses it by default assume that all students have basic knowledge of subjects but there is no checkpoint to filter out such learner who even don't have basic knowledge of subject. So, there must be some system to check the knowledge of learner and if they are not up to mark then there must be some suggestion of bridge courses is there. So that any novice learner first of complete bridge courses recommended by the system and then he can start that course.

Participants Heterogeneity and Language Barrier

Learners are from geographical areas and cultures participated in MOOCs. Almost all the MOOC courses have been prepared in English language. Although, English is international language but till now millions of people don't know English language. Also, many countries don't support English language like China etc. If the MOOC courses are prepared in their native language, then it may be more fruitful for them. Also, it will reduce the dropout rate. But it's big challenge to prepare lectures in many languages. There is a need of such system which can convert the available MOOC courses into their languages[18].

4. PROPOSED MODEL TO SOLVE VARIOUS CHALLENGES CONFERENTED BY MOOCS

Adaptive Learning solves most of the challenges and increases attainment, reduces the dropout rates, increases teacher effectiveness and maintains student motivations. There are other techniques like Augmented Reality and Gamification also solves many challenges faced by MOOC courses. Adaptive learning increases student engagement, provides efficient learning, provide better learning experience, allows students to progress at their pace, minimum student-teacher interaction and increases productivity [19]. Augmented Reality increases proximity to virtual objects, promotes pervasive learning, enables visualizing the unviable processes, promotes collaborative learning, friendly for all age groups and helps visually impaired learners by enhancing virtual audio objects. Gamification enhances learners experiences, builds team working skills, spur student motivation, strengthens critical thinking, makes routine work interesting and develops problem solving skills by adding gaming elements like ranking, difficulty levels, points and virtual gifts [7].

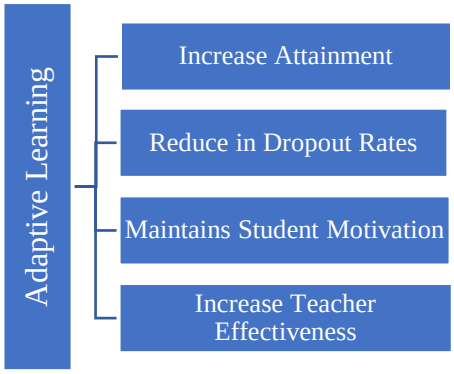

Fig. 3: Adaptive Learning

Blind Spot and Bridge Courses challenge can be resolved by using system whose flow chart is given in figure. According to this system before registration to the MOOC course every learning have to go through the basic knowledge check point which ensure that learner have required basic knowledge of that course or not.

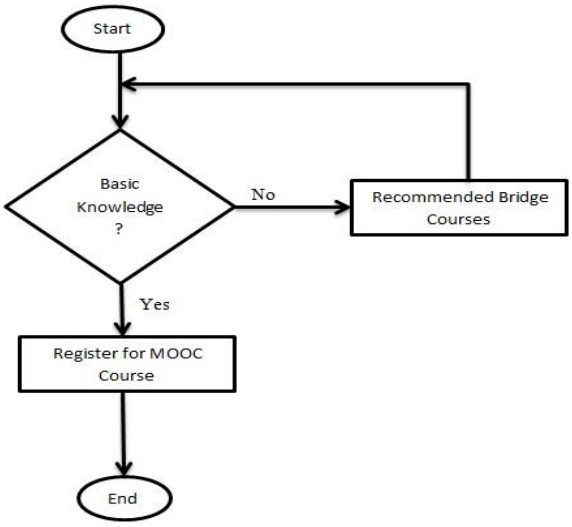

Fig. 4: Proposed Model for Expert's Blind Spot

If the learners don't have basic knowledge, then the system generates some recommended bridge courses which are compulsory for acquiring basic knowledge of the respective subject. After acquiring basic skill learner have to again pass through that check point. If learners have basic knowledge, then the learner can register for the course. So, by using this system this challenge faced by MOOC can be resolved.

5. CONCLUSION

MOOCs are the future replacement of Distance Courses. As we explained there are many challenges confronted by MOOCs. Because of these challenges more dropout rate is there. So, to control dropout rate we need to add Adaptive Learning, Augmented Reality and Gamification into MOOC courses to fulfill individual learner's requirement. Now these day's a lot of research is going on dropout rate prediction. We have need of such a system who predicts dropout rate earlier so that respective countermeasure steps can

be taken. Small Private Online Courses (SPOC) is also better option. Harvard Business School (HBS) implemented SPOC and find out 90% course completion rate.

In this paper we also proposed model for the expert's blind spot. This model can solve this challenge by adding one check point which confirms that learner have required knowledge or not for the respective MOOC course. If learners don't have required knowledge, then this system can generate bridge courses which have learners to build basic concepts of respective MOOC course. We have needed to develop new Artificial Techniques (AI) to properly implementation of Adaptive Learning, Augmented Reality and Gamification. There is further need of research and analysis regarding these challenges to determine what solutions might exist.

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