Chen, W. et al. (Eds.) (2016). Proceedings of the 24th International Conference on Computers in Education. India: Asia-Pacific Society for Computers in Education

Coordinated Faculty Professional Development Activity: Key for High Retention in MOOCs

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Abstract: Massive Open Online Courses (MOOCs) are a rapidly growing form of educational technology and have the potential to deliver world class education. The potential benefits are particularly of paramount importance in developing countries such as India due to paucity of good faculty with regards to scaling up of professional education. India has now officially jumped into the open online courses bandwagon with the government announcing many initiatives with an objective of providing affordable and quality education to all desirous. IITBombayX is one such online platform which offers interactive online classes and MOOCs for faculty professional development. This paper reports findings from MOOC on ET601Tx that were instrumental in 98.6% course completion rate conducted at our institute against a general 24% for this course at all over India. Out of the 146 registered, 144 went on to complete the entire course and received honor code certificates. The post MOOC survey of 133 participants revealed that 'Institutional Leadership' in the form of Coordinated *Faculty Professional Development Activity (CFPDA)* was a major contributing factor in making the faculty persists throughout the course and completing it successfully. The CFPDA at the institution, in the form of review meetings facilitation by education technology mentors, department coordinators has led to 98.6 % persistence and higher scores obtained by the faculty participants.

Keywords: MOOCs, ET601Tx, completion rate, persistence, coordinated professional development activity, institutional leadership, education technology.

1. Introduction

Massive Open Online Courses (MOOCs) is an emerging technology-enabled innovation in education which attempts to improve quality education and its extent of delivery using Internet and mobile technologies. MOOC will not replace in any way the existing education system but provides a supplementary platform to study quality courses from top class institutions. 'Swayam' programme is part of the initiatives undertaken by the ministry of human resource development (HRD) for enhancing education in India through MOOC. IITBombayX is one such online platform and offers interactive online classes and MOOCs. Courses from multiple disciplines are presently offered.

MOOCs have the potential to deliver quality education on a very large scale. This has been on account of the fantastic growth of technology over the last couple of decades. MOOC providers such as 'iversity', 'Coursera' & 'edX' have already conducted hundreds of classes based on content developed by top university professors and this list continues to expand (Colin Taylor et al, 2014). The fact that these courses are conducted by top universities, the quality and content of the courses is extremely good and this is a major advantage in developing countries where the quality of education is not at par with that of the west. However MOOCs programs all over world including India suffer from poor retention and course completion rates. It is important to analyze the completion and dropout rates for MOOC courses to become more successful in the future. If we understand the reasons behind the dropouts we will be able to take preemptive steps to ensure that participants persist with the course till the end. As per the available literature on MOOC attrition the major causes for high attrition in MOOC are; lack of time, lack of learner's motivation and lack of interaction with peers, insufficient skills or prerequisites and hidden costs. For instance, in the ET601Tx MOOC course on education technology of the 5319 faculty participants who had enrolled for the course only 1281(24%) were awarded the honor certificate. In order to have minimum dropouts and successful completion there is a need for an institute to have a well-coordinated system in place. Our paper discusses the evidences from one such MOOC course ET601Tx executed under a CFPDA at our institute.

There are several types of MOOCs on offer today. The intended audience may be students from one particular university or a wider audience across the globe. In India MOOCs are likely to become a part of the university curriculum in the coming years. It is expected that one of the course per semester may be a MOOC. In such a scenario local institutions may find it difficult to manage and execute MOOCs given the issues associated with it. Our study focuses on one such type of MOOC in which the participants are from same location. Section 2 discusses the literature survey and in Section 3 provides the details MOOC for ET601Tx. Section 4 discusses the objective and methodology followed by implementation and execution details at our institute for sustaining the MOOC. We report the results of various analyses and its subsequent discussion in Section 5 followed conclusion and recommendation in section 6. Based on the findings of our study we present a model which may be adopted by other institutes for implementing such MOOCs.

2. Literature Review

Literature on MOOC reveals that even today MOOC retention rates are very low. Khalid Alraimi et al. (2015) have mentioned several studies which conclude that average retention rates in MOOCs are less than 10% (Kovanovi et al, 2015), (Adamopoulos, 2013). As mentioned before the most common research approach is to use a single MOOC course as a case study to study retention rates. In a case study of astronomy MOOC, de Fretas et al. (2015) speculate that challenging assignments and gamification positively impact completion (Kovanovi et al, 2015), (Adamopoulos, 2013). Greene et al. (2015) conducted a case study looking at learner retention within a single MOOC on 'Metadata: Organization and Discovering Information'. They have tried to predicted retention using survival analysis based on the collected survey data. They found participants with prior experience of MOOCs were less likely to drop out, as were older and more educated participants.

There are some studies that have tried to look at retention factors over various MOOCs. Hew (2014) studied the three top rated MOOCs across three disciplines. On the basis of this work they propose five features that promote student engagement: problem-centric learning, instructor accessibility and passion, active learning, peer interaction and using helpful course resources. However, they did not look directly at retention and they did not include any lower ranked MOOCs as controls (Kovanovi et al, 2015). A detailed review about MOOC attrition has been done by Hanan Khail and Marin Ebner. They have listed five major causes for attrition in MOOCs; Lack of time, feeling of isolation and lack of interactivity, insufficient background knowledge and skills & hidden costs (Khalil, H & Ebner, M (2014). Belanger & Throntorn (2013) have reported that time is an important factor that determines MOOC completion rates. Most participants of MOOCs have reported in feedback surveys that watching online lectures, completing assignments & quizzes is very difficult to manage given their already busy schedule. Another issue with regards to course duration is that different people have different preferences when it comes to moving through the course. Bruff D (2013) mentions that while some students prefer to move through the course week by week others prefer to get all the content at the start.

According to Yuan and Brown (2013) there are many factors that influence student's motivation. These are future economic benefit, development of personal and professional identity, challenge and achievement, enjoyment and fun. Feeling of isolation and lack of interaction in MOOCs was also a major factor which contributed to the poor retention rates. Pallof and Pratt (2003) have reported that the feeling of isolation is a direct result of poor course design. It is a consensus among various researchers that interaction and communication in MOOCs helps learners develop their own knowledge, their own ideas and develop long term relationships with peers. Insufficient background knowledge and skills are major reasons for poor completion rates among MOOCs. This is specifically the case for advanced topics and subjects that require specific skills such as programming, software simulations and intensive analytical treatment.

Apart from the above mentioned issues other literature reveals that the major reasons for poor persistence and completion are the lack of problem centric learning and instructor accessibility. The above literature reports the finding for MOOCs taken up by a wide range of learners form students to amateurs. There is no account of a MOOC specifically conducted for faculty on pedagogy. To train our faculty in modern pedagogic practices the institute motivated faculty for enrolling in MOOC ET601Tx.

3. MOOC course on ET601Tx

MOOC course on "Educational Technology for Engineering Teachers" (ET601Tx), aimed to provide an introduction to research-based and learner-centred pedagogy for effectively integrating ICT in engineering education helping them to become informed teachers and tackle teaching-learning problems competently. The MOOC was offered during the weeks of Jan. 7 to March 7, 2016 for a total of six weeks, on IITBombayX platform.

The MOOC on ET601Tx had a total of 5319 enrolled participants; out of the total 5319 only 3447 were active. Out of the total active 3447 participants 1281 participants have completed the course successfully and received honour code certificate.

The considerable quantitative growth in engineering education has posed the problem of maintaining quality of both faculty and students. Today Engineering colleges can try to maintain the quality of teaching and learning by upgrading their faculty and motivating them for bridging the industry academia gap. Therefore faculty development is an essential part of institutional effectiveness in delivering the professional education. Faculty development is therefore of paramount importance for teaching-learning process. Essentially faculty development takes place through various tasks assigned to them, such as revision of course curriculum, professional study groups, workshops, seminars, conferences, coaching, mentoring, in-service programs, professional portfolios, research activities, and professional learning communities (S. Halkude et al, 2016) (S. Pancucci, 2010). ET601Tx was the only course which offered pedagogy for faculty development. Moreover, many faculty members in engineering colleges are novice and have not had any formal training in education and pedagogy. In order to address this issue our institute encouraged faculty members to enroll for ET601Tx. Resultantly 146 faculty members enrolled for the same.

4. Coordinated Faculty Professional Development Activity (*CFPDA*) Model

The main focus of our study is on learner retention and institutional support for MOOC completion through a CFPDA. Learner retention has a lot to do with course quality. Shelton (2011) has mentioned 13 different paradigms for evaluation of quality of online resources. Of this Institutional Commitment, Support & Leadership are the most important paradigm for ensuring quality. The main reason for poor retention rates in MOOC as mentioned above are lack of time & lack of motivation & interaction.

Professional Learning community (PLC) at our institute was formed at the commencement of the academic year 2015-16 to improve teaching-learning process for various courses across engineering programs (S. Halkude et al, 2016). This served as the foundation for CFPDA model for executing MOOC ET601Tx as shown in Figure 1. The CFPDA aims at tackling the above mentioned issues that occur in a MOOC.

Within this model, three layers describe the relationship between faculty professional development activities and faculty persistence & successful completion in MOOC ET601Tx. At the first layer we have organizational structure: a cyclical process of conversation and conflict support the development of community, which in turn supports changes in knowledge, skills, and teaching practices. At the next layer, meeting details with the Principal, Institute MOOC Coordinator, all Heads of departments and Department Coordinators serve to mediate substance of faculty conversations. At the third layer, we have leadership practices that facilitate collaboration.

4.1 Participants

Out of the 5319 participants for MOOC on ET601Tx, 146 were from our Institute. The participating faculty members had varying teaching experience from 2 years to 30 years.

4.2 Organizational Structure

The organizational structure of CFPDA includes Principal, PLC coordinator as Institute MOOC Coordinator, Head of Departments, Department coordinators and all the enrolled faculty participants for MOOC on ET601Tx. The organizational structure tried to address the issue of Learner Motivation. The desire to participate is a personal matter and the institute can only suggest or recommend

participation. However once a participant has enrolled the motivation may wane and this affects the retention and completion rates. The CFPDA model ensured that the learners received the necessary support when s/he faced any difficulty which helped to maintain the motivation level of the participants through various collaborations.

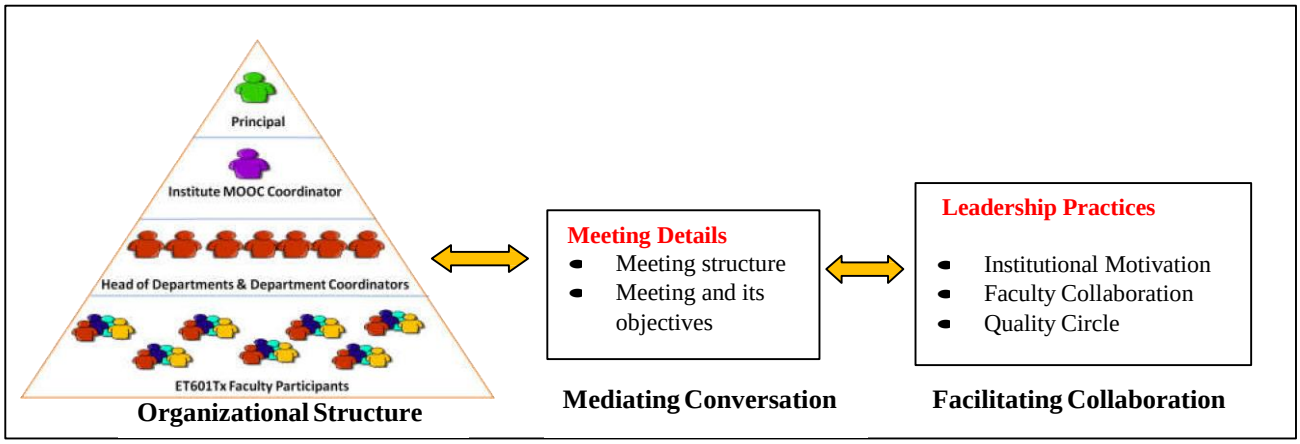

Figure 1: Coordinated Faculty Professional Development (CFPDA) Model

4.2.2 Mediating conversations

Once the structural and leadership practices were in place to facilitate collaborative practices, the next factor in the relationship between faculty professional development activities and faculty improvement was the nature of structured team meetings and the way in which the details of those meetings served to mediate the substance of conversations during meetings. Mediating conversations helped tackle the issue of time management.

Unlike university curriculum MOOC does not have a defined frame work hence the issue of lack of time is more an issue of poor time management. Hence a time bound monitoring in the form of weekly meeting and reviews were implemented. This ensured that specific time bound targets were available to participants which significantly mitigated the problem.

After the commencement of the ET601Tx looking to the weekly schedule of assignments, every Thursday a meeting of the Principal, Institute MOOC Coordinator, all Heads of Departments and Department Coordinators were organized. In all, 9 meetings were conducted over the duration of the MOOC on ET601Tx. Active participation of every member was crucial factor for persistence in completion of the course. These meeting incorporated significant amounts of group dialogue, and this dialogue was typically driven by active learning components: reviewing participant assignment completion work, and their scores. Also, participants with low progress were identified during the meeting and special counseling and support was given to them by the department coordinators for improvement.

4.2.3 Facilitating collaboration

The success of the MOOC ET601Tx with CFPDA model as an agent of faculty improvement seemed to be interwoven with leadership strategies and organizational structure. Facilitating collaboration handled the issue of interaction amongst learner & course faculty. Compared to traditional classroom, MOOC do not provide effective interaction amongst learners and course faculty. Organizational structure and leadership practices served to create a foundation for intra and inter department collaboration. Through Local study groups, participants actively got involved in peer discussion and assessments of the resources created as a part of this course, as per their convenience. These discussions were supported by local supervisors.

Our preemptive approach helped us overcome the above mentioned limitations and achieve very high completion rates up to the extent of 98.6%.

5. Findings & Discussion

In order to evaluate the participants perceptions towards MOOC, contributing factors for the successful completion of ET601Tx course and their inclination towards taking up MOOC course in future, we developed a survey questionnaire of 28 questions regarding demographic information, participant perception, collaborative learning. The following are the some findings from the same:

More than 80% of the participants believed that the course will allow them to tackle teaching-learning issues better and that this would improve their teaching skills. This finding is in sync with findings from other studies about MOOC on account of the keenness of institutions and faculty who are interested to take up MOOC as a new technique in learning (Davidson 2012; Ruth 2012). Studies have shown that compared to attending face-to-face courses, participants need more discipline to succeed in an online course (Allen and Seaman 2014). Keeping the same in mind the institute created Faculty Professional Development Activity.

In this six-week ED601Tx MMOC, the all India completion rate was 24%. In comparison to this 98.6% (144/146) participants from our institute completed the course and went on receive their certificates. The reasons for this high success rates was on account of the proactive strategy adopted by the institute.

The survey results show that over 70% of the participants indicated that the department coordinator was the major motivation for them to complete the task. 29% respondents said that it was support from peers that motivated them to complete their assignments. Over 70% of the participants met with the department coordinator at least once a week, while 18% met the coordinator on a daily basis. This indicates very high interaction between the faculty participant and the coordinator. Nearly 75% of the participants found the interaction with the department ET coordinator to be very useful. As mentioned in the literature review one of the major reasons for poor dropout rates in MOOCs was the lack of interaction and poor motivation. The above mentioned strategy addresses specifically this issue. The positive atmosphere resulted in increased peer interaction with 90% participants interacting with each other on a regular basis.

Our survey also indicates that 32% participants were satisfied with the course content and 27% with the instruction quality. One of the major issues with MOOC was the issue of lack of time and motivation which depends on the design of the course. This finding indicates that the flexibility offered by the ET601Tx was also instrumental in high completion rates at our institute.

6. Conclusion & Recommendations

The objective of our study was on learner retention and institutional support for MOOC completion through a CFPDA. The main factors, which that are responsible for the high completion rates and scores at our institute are; interaction with Department ET Coordinator, weekly meeting and review and institutional support. This is because these measures directly addressed the three major causes of MOOC attrition as mentioned in the literature review. This study showed that the majority of this MOOC's participants had a positive experience and learned new knowledge and skills about a topic they were interested in. A CFPDA is found to be effective in making a MOOC successful in which institutional motivation, collaboration & structured system for monitoring are the key driving factors. Using presented CFPDA approach with modifications as deemed fit for local situations, it is very much possible to make MOOC successful in Indian scenario where there is a paucity of good and qualified faculty due to scaling up of engineering education.

Acknowledgements

We would like to thank all faculty of Walchand Institute of Technology for their dedication and efforts during the MOOC on ET601Tx course. We would like to thank the management, principal and heads of various departments of Walchand institute of Technology, Solapur for participating and making this experiment successful. We extend our thanks to IIT Bombay for providing an opportunity to undergo MOOC through the IITBombayX platform.

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