Promoting Educational Resilience through Technology Enhanced Learning for Sustainable Quality Education and Training in the Context of Higher Education in India :An Innovation under CEMCA

Abstract

Ministry of Education, Govt of India (GOI) under the digital India initiatives encourages teachers of higher education making use of SWAYAM (online platform) effectively and efficiently for education, training and capacity building. University Grants Commission (UGC), GOI has been encouraging the teachers to submit proposals for designing and developing Massive Open Online Courses (MOOCs) for UG/PG levels & skill development of youth under SWAYAM. Therefore, teachers of higher education must be trained, oriented and exposed for capacity building to enable them to design and develop quality MOOC following guidelines of SWAYAM. **CEMCA designed a** two-week course **to empower the teachers to learn about teaching with technology with a MOOC "*Development of Online Courses for SWAYAM*" using appropriate learning design, simple and accessible technology.** The ultimate purpose was to enable the teachers to contribute effectively and efficiently **promoting educational resilience through Technology Enhanced Learning (TEL) for sustainable quality education and training in India.** It was implemented in collaboration with State Open Universities to train, orient and guide the teachers for developing quality MOOCs with a purpose to create a pool of skilled workforce in India to address to the needs and demands of higher education. With completion of 5 cycles of implementation of this MOOC in West Bengal, Uttarakhand and Andhra Pradesh, a research study was conducted to assess various dimensions of this initiative and evaluate its effectiveness. The findings of this study would help us to i) identify the expectations of teachers and their difficulties; ii) assess the level of knowledge, skill, and competencies acquired by the teachers; iii) review various components of the MOOC; iv) recommend improvement of this MOOC. The present paper focuses on these collaborative initiatives of CEMCA for promoting e**ducational resilience in India.** The thrust was to facilitate TEL **for sustainable quality education and training** in the field of higher education.

Key Words: TEL, Educational Resilience, Sustainable Development, MOOC

Introduction

Evaluating the overall effectiveness of Massive Open Online Courses (MOOCs) is an attempt to improve and enhance its effective and efficient utilization. It's important to have an evidence based analysis of the impact of MOOCs on learners' knowledge, skills and attitudes. Studies revealed that MOOCs have the potential to facilitate and promote learner autonomy and create learner friendly learning environment (Goldie, 2016). At the same time there are studies that reflect critical issues effecting efficacy of a MOOC such as massive dropout rates. Out of the total registered learners around 20% of learners could complete the course (Khalil, 2014). Actual social networking among learners for teaching learning process towards learning outcomes for enhancing knowledge, skills and attitude is yet to be proved. As a result there is a threat to the openness and diversity of a MOOC (Chapman et al., 2016). Role of facilitator is very significant. They just not act as a stimulator for the learning of learners but maintain and ensure active participation of learners and their engagement (Goldie, 2016). Therefore, it is, thought to have

more research based evidence to better understand these MOOCs to encourage higher rates of learner's engagement (Dash and Dash, 2021). The present study was an attempt to evaluate the success of this MOOC in developing skills taught in this course. The overall goal of this study is to assess the performance of teachers in terms of skill development and capacity building who have completed this two-week MOOC course Development of Online Courses for SWAYAM and at the same time improve various aspects of this MOOC (in terms of design, development and implementation) on the basis of feedback and observations from various stakeholders.

About the MOOC

The **MOOC:** *Development of Online Courses for SWAYAM"* **using appropriate learning design, simple and accessible technology** is a real need of the hour to create skilled workforce to design, develop and implement MOOCs in various courses was offered by CEMCA in collaboration with various open universities in India through different online learning platform. The duration of the MOOC was two weeks and was available for free to all learners. The MOOC was implemented thrice for Netaji Subhas Open University, Kolkata, West Bengal, twice for Uttarakhand Open University, Haldwani, Uttarakhand and once for BR Ambedkar Open University, Hyderabad, Telangana in India. There is an increasing demand for creating trained professionals' in the field of higher education in India particularly training and skills in designing, developing and implementing quality MOOCs in SWAYAM platform with effective use of Information and Communication Technologies (ICTs) (Gallagher, 2015). Therefore, for the first time a MOOC is created to train teachers of higher education new skills and can be used for their continued professional development. Recurrent training and orientation for skill development is important because of the rapid growth and changes in technology mediated interventions.

This MOOC aims to build the capacities of the faculty members to create a pool of trained and skilled workforce to design, develop and implement online courses on SWAYAM platform in general and on any other LMS in particular using four quadrant approaches. Subsequently, the MOOC is inaugurated on 18th May 2021 and completed implementation of Five cycles and the sixth cycle is scheduled for implementation in December 2021. The detailed about the cycles of implementation are as follows:

Sl. No.	Duration	Implementing Open University	Cycles	Enrolment	Course completed
1	19/05/2021 to 02/06/2021	Netaji Subhas Open University, Kolkata, West Bengal	1	219	94
2	16/08/2021 to 31/08/2021	Netaji Subhas Open University, Kolkata, West Bengal	2	395	125
3	16/11/2021 to 01/12/2021	Netaji Subhas Open University, Kolkata, West Bengal	3	242	42
4	26/06/2021 to 05/07/2021	Uttarakhand Open University, Haldwani, Uttarakhand	1	1476	635
5	14/09/2021 to 28/09/2021	Uttarakhand Open University, Haldwani, Uttarakhand	2	801	252

6	20/12/2021 to 02/01/2022	BR Ambedkar Open University, Hyderabad, Telangana	1	1717	166

This is a two-week course comprised of five topics (three topics in week one and two topics in week two) such as: i) Topic I: Overview of Swayam; ii) Topic II: Quadrant-I (e-tutorial); iii) Topic III: Quadrant-II (e-Content); iv) Topic IV: Quadrant-IV (Discussion Forum); and v) Topic V: Quadrant-III (Assessment)

Rationale of the Study

The MOOC ***"Development of Online Courses for SWAYAM"*** was designed, developed and implanted in a collaborative mode to address to the need and demand of higher education in India with a broad objective to train and orient teachers of higher education for their capacity building & skill development to enable them to develop and implement online courses (MOOC) in SWYAM platform. This is a mission to provide this benefit to all the teachers of higher education in India with a unique initiative for capacity building and skill development of teachers through technology enhanced learning. Experiences of early implementation of this MOOC would be a means to improve the overall design, development and its implementation from time to time to make it more user friendly and motivate the learners optimally. Therefore, it is, decided to conduct a research study to assess all aspects/dimensions of this MOOC and evaluate its overall effectiveness for sustainable quality improvement.

Research Question

1. How has the MOOC impacted the learners' knowledge, skills and attitudes in designing, developing and implementation of a MOOC for facilitating learning of learners in swyam platform ?
2. How has the MOOC reached the intended target group and made a difference to participants in their work or studies?
3. How has the MOOC facilitate the learners developing network and engage participants meaningfully and productively during the course of study?
4. How has this MOOC ensure sustainable professional development of learners in higher education ?

Objectives

The specific objectives of this study include:

i) Identify the expectations of teachers and academics and other stakeholders from this MOOC course in terms of acquiring knowledge, skill, attitude, and competencies for facilitating technology mediated learning

ii) Assess the level of knowledge, skill, attitude, competencies and level of satisfaction acquired by the registered (participated and completed) learners from this MOOC "Development of Online Courses for SWAYAM".

iii) Review all components of the MOOC "Development of Online Courses for SWAYAM" currently in use in India and some of the other Asian for further improvement

iv) Recommend improvement of the MOOC "Development of Online Courses for SWAYAM" to prepare the teachers, academics and administrators of higher education in India for facilitating and promoting online learning.

Methodology

Descriptive survey research was adopted using quantitative and qualitative data collected through multiple means in this study. The population of this study includes teachers, academics and administrators of higher education including all the registered learners of this course and the course team. The sample of the study comprised of 131 participants (registered learners, learners acquired certificate of participation/completion and drop out learners) of this course, all the members of course team (course developers/teachers and mentors) and selected members (teachers and administrators) from the implementing agencies associated with this MOOC in different phases of its development and implementation. Random sampling technique was adopted for identification of sample of the study.

Data Collection: Questionnaires were developed for collection of data from registered learners and also from course design & development team and iii) administrators of implementing open universities. The items of the questions included questions about learners' background, reasons for joining the MOOC, participant's interaction with other learners, design, development, evaluation and relevance of the MOOC etc.

Major Findings

With theme based analysis and interpretations to assess participants perspectives on various dimensions, the findings were presented in the following four sections.

Section I: Background of Learners

Sample of the study are working professionals from institutions of higher learning and were associated with teaching learning process at different levels in different disciplines. Out of the whole sample about 26% participated under Netaji Subhas Open University, Kolkata, West Bengal, 36.6% from Uttarakhand Open University, Haldwani, Uttarakhand and 37.4% from BR Ambedkar Open University, Hyderabad, Telangana state. It is found that 64.1% completed the MOOC, 28.2% did not complete and 7.6% dropped out. Some of the important reasons of drop out are i) they find it difficult (4.6%), ii) could not spare considerable time (11.5%), iii) find it difficult to clear their doubts and confusion (2.3%), iv) did not find it interesting (0.8%), v) mismatch between theory and practice (2.3%), vi) not interested in certification (2.3%) and vii) other reasons (14.3%). Majority of participants (20.6%) are in the age group 41-45 yrs. About 25% of participants are above this age group (41-45 yrs) and remaining is below this range. Only 30.5 % were female participants It is important to note that 41.2% participants are having Ph.D

qualification, equal percentage of participants (41.2%) are having PG degree and remaining are with other qualifications such as UG (14.4%), Pre-University(2.5%) etc. About 7.6% of participants are with experiences more than 25 yrs. and 21.4% with less than 5 yrs experience. All participants were exposed to this training programme of designing and development of online courses through this MOOC with their educational and professional backgrounds.

Section II: Design and Development of MOOC
About 68% participants perceived that coverage of content were adequate for understanding the SWYAM platform. Wide range of content covered in this MOOC as responded by 64.1% participants. Nearly, 65.7% participants found that content were as per the level and standard of participants and rightly addressed to the needs in developing online courses. It's encouraging that content of each module is updated as per the expectations of participants as viewed by 62.6% participants. About 50% responded that content were helpful in instructional planning of online courses. About 60% of the participants viewed that content covered in this MOOC helped in developing positive attitude and thinking of learners towards learning through online courses, as it is very important for the success of MOOCs. More than 64% appreciated the content for developing their basic knowledge and understanding about online courses.

About 67.2% felt that language used in this MOOC is easy to understand which makes the teaching learning process effective. Simple languages used in this MOOC, effectively communicate the message of design and development of the MOOC as reported by 63.4% respondents agreed to the use of simple language in the MOOC). Explaining the technical concepts of design and development of MOOC using easy and simple language is important in an online course. This aspect is rightly taken care in this MOOC as stated by 59.5 % participants and at the same time 61.8% appreciated the word/language used to explain the technical terms meaningfully. It's also encouraging to note that about 64.2% found the languages used were easy to understand and comprehend..

Presentation of content of the MOOC is very important and significant in better understanding of the concept and acquiring appropriate skills through such MOOCs. Though 67.9% found presentation systematic & logical, however, a major chunk of participants found to have their own reservations. Therefore, it is, important that this aspect is always taken care of to ensure effective and efficient learning of all participants while designing and developing online courses. While appreciating appropriateness and accuracy of the sequence presentation by 66.4% participants, logical necessity and psychological proximity in presentation was also found to be maintained as viewed by 63.4% participants. Presentations of content rightly facilitated better understanding and comprehension of the concept as reported by 65% participants.

Orderly organization of content is an important means of motivation and learning of learners in the context of online education. About 66.4% found that the content are in order, facilitated and promoted better understanding of the concept. The overall organizational structure of this MOOC was based on the principle of instructional design of online learning as stated by 68.7%

participants. This is an important means of motivation in this online course as 63.3% participants agreed to this proposition in the context of this MOOC. About 64.9% participants appreciated the presentation of examples and illustrations in this MOOC as they rightly matched to the online pedagogy. While organizing the content, structural design is very important which ultimately facilitate and motivate online learning. It's interesting to note that 67.9% participants felt that structural design of this MOOC rightly facilitate and motivate them to gain insight into the MOOC.

Section III: MOOC Learning

In online courses role of e-text is crucial and it's a powerful means of developing knowledge, understanding, thinking and attitude of learners with effective teaching learning processes. About 38.9% participants strongly agreed and 24.4% agreed in the context of the role of e-text of this MOOC developing this technical knowledge and required skills in designing and development of online courses in SWYAM. 61% participants are confident of acquiring training and developing their capacity using e-text in this MOOC. At the same time equal percentage of participants (61.1%) found the e-text appropriate and relevant to the cause and 60.3% stated that they were presented effectively to address to their issues & difficulties during online learning process. It is revealed that 61.8% participants agreed that e-text of this MOOC rightly supplement other components. As we know that effective instructional design and development contribute to the success of online courses in MOOCs. About 67.9% participants found to be confident in acquiring this concept through this MOOC and about 20.6% did not agree to it and 11.5% partly agreed. This certainly necessitates to think alternative means / or add on features for better understanding and comprehension of instructional design through online learning. About 62.6% participants aware about the facilities of this MOOC to make use of video components and its relevance in enhancing their knowledge and skills and video components user friendly, video components effectively supplemented to the e-text as started by 75.6% participants. 64.9% participants revealed that course content is very useful with quality video to supplement e-text.

Forum is one of the important components of a MOOC which facilitate discussion and interaction among the participants and between participants & instructors. It is a means to bridge the gap between the teacher and learner. About 66.4% participants aware of the forum. However, 29.9% did not agree to it and 13.7% partly agreed. About 43.6% are not in favour of this pout proposition. This would be serious concern to ensure utility of this MOOC and developing skills in teachers. 63.4% participants appreciated the use of this MOOC understanding the concept of forum. Internalizing the importance and relevance of forum in a MOOC is a means of better understanding of the forum and its implications. Effective instructional design and appropriate teaching learning process is important for result oriented outcomes, be it in face to face classroom or online classroom. Accordingly, the pedagogical interventions are planned, designed, developed and implemented by instructors/mentors. Instructors/mentors shared the schedule of activities timely while implementing this MOOC as reported by 68.7% participants. 69.4% expressed that instructors/mentors were supportive and rightly facilitated their learning. It's important to note that 64.1% viewed that this MOOC taught them the role of instructors/moderators in a MOOC. In an online course addressing issues & difficulties of learners effectively and timely is important to sustain their motivation. About 64.1% participants found to be satisfied with the role of instructors/moderators in resolving their issues and difficulties. About 62.6% expressed that teaching learning pedagogy is effectively

integrated in this MOOC and helped them learning the mode of integration. About 64.1% participants felt that this course is effective understanding the concept of instructional design of a MOOC. This seems a major advantage of this MOOC in developing knowledge and skills of teachers of higher education designing and developing MOOCs for SWYAM platform.

Section IV: Evaluation and Relevance
Evaluation is an important dimension of the whole teaching learning process and one of the core components of instructional design. Teachers must have a sound knowledge and understanding of various aspects of evaluation in a MOOC, so that they can make use of their skills in evaluating the performance learners in online courses (MOOC). 67.2% participants expressed that this MOOC taught them various components of evaluation and each of the components are rightly integrated in this MOOC as well, which provides them an opportunity make use the components effectively. Sharing information timely at each phase of evaluation helps participants' better understanding. 64.1% participants viewed that information were shared timely by the instructors and mentors in each components of evaluation followed by constant guidance of mentors helped them understanding concept of online evaluation in MOOC. More than 60% participants appreciated the concept of using examples and illustrations for better understanding and skill development. Overall relevance of a MOOC has a strong bearing on the effectiveness of the evaluation system of a MOOC. About 64.9% expressed that content of this MOOC helped them developing inclination towards design and development of online courses such is supplemented by appropriate examples and illustrations understanding technical aspects and developing right attitude towards online course. This is aspect is supported by 63.3% of participants. At the same time contents included in the MOOC are as per the need of new learners and helped teachers to address to their practical difficulties as stated by 64.9% of participants. About 67.2% participants expressed that content included in this MOOC equips them meeting the demand of online learning in higher education. About 63.3% participants viewed that exposure to this MOOC would certainly develop professional competencies in design and development of online courses. Content of this MOOC are found (38.2% participants strongly agreed and 29.8% agreed) to be informative and highly relevant for training, orientation and capacity building of teachers for design, development and implementation of MOOC.

Discussion and Conclusion

The study explored the factors that affect learner's acceptance of MOOC to understand the concept of design, development and implementation of online courses in SWYAM platform of Govt of India. It's important to identify factors that affect the acceptance of learners and their adaptability in using online courses. Therefore, assessment of learning environment, design & development of course contents, participation & interaction and guidance from the course team (instructors) are some of the important factors that contribute learner's acceptance of online course in the form of MOOC. Hence, creating trained workforce in institutions of higher learning with better understanding and insights into managing their online course is very crucial in the context of new paradigm of teaching learning process with reference to New Policy of Education 2020. Findings of the study would be beneficial in providing insight for institutions to implement MOOCs.

With effective and efficient strategies in the design, development and implementation, MOOCs would impact strongly in professional development of teachers of higher education institutions. Important factors that affect acceptance of online courses in the form of MOOCs are quality of learning environment, design of course contents, interaction and guidance and overall support services by mentors and instructors during the course of implementations. Learners can collaborate and communicate with their peers with effective and efficient use of forum. Learner support services and guidance are important to meet expectations of diverse learners (Rogers, E. M., 1983). Perceptions of participants depend upon their background, level of training, working experience, and level of literacy in ICTs. This study was conducted using a broad range of learners without focusing on the specific group and background of learners. Most of the participants in this study had little to no prior experience in design, development, implementation and use of MOOC. Rate of participation, and time required to use MOOC are also important considerations to access the level of acceptance of MOOC among the teachers of higher education institutions.

This evaluation focused on evaluating quality of this MOOC and its impact on participants' learning. Now it's important how much of the learning they would apply in their professional activities. Practically it's really a challenging to identify the factors to evaluate the effectiveness of this MOOC. Findings of this study would help developing more such MOOCs for recurrent professional development of teachers. MOOCs of such type can improve learning and knowledge attainment leading to skills enhancement. One of the implications of this study is to recognize factors that engage learners in the design and implementation of MOOC. The findings have shown that factors that affect the learners' engagement are quality lecture videos, self assessment tools, networking devices (forum) etc. Support and availability of the appropriate resources are essential (Sinclair, et.al., 2015). Components like quality lecture videos, self-assessments tools and effective networking among participants are found to be important and essential in the MOOC. Networking through forum is an important component facilitates mutual discussions and interactions among participants. It would attract more learners joining the MOOC (Liyanagunawardena, Adams and Williams, 2013), and can increase learner satisfaction (Hossain et al., 2015). Therefore, there should be more efforts on the part of instructors and mentors ensuring more participation of participants in discussion forum and their active involvement and engagement in discussion and interaction. Developing skills to design quality MOOCs and implementing them effectively would contribute to the continued professional development.

REFERENCES

Chapman, S.A., Goodman, S., Jawitz, J. and Deacon, A., 2016. A strategy for monitoring and evaluating massive open online courses. *Evaluation and Program Planning*, 57,

Dash, M. K. and Dash. S., 2021. Remote learning in the context of school education: challenges and opportunities. *Journal of global resources, 07(2)*

Gallagher, D., 2015. The Talent Dividend: Interactive Infographic. *MIT Sloan Management Review*. Available at: <https://sloanreview.mit.edu/article/the-talent-dividend-interactive-infographic/>

Goldie, J.G.S., 2016. Connectivism: A knowledge learning theory for the digital age? *Medical Teacher*, 38(10),

Hossain, M.S., Shofiqul Islam, M., Glinsky, J.V., Lowe, R., Lowe, T. and Harvey, L.A., 2015. A massive open online course (MOOC) can be used to teach physiotherapy students about spinal cord injuries: a randomised trial. *Journal of Physiotherapy*, 61(1),.

Liyanagunawardena, T.R., Adams, A.A. and Williams, S.A., 2013. MOOCs: A systematic study of the published literature 2008-2012. *The International Review of Research in Open and Distributed Learning*, 14(3),

Rogers, E. M. (1983). *Diffusion of Innovation* (3rd ed.). Free Press.

Sinclair, J., Boyatt, R., Rocks, C. and Joy, M. 2015. Massive Open Online Courses: A Review of Usage and Evaluation. *International Journal Learning Technology,* 10(1):