

Open Education, MOOCs and Dialogs with Libraries in Developing Countries: Observations from Trainer's Perspective

Shipra Awasthi¹, Shiva Kanaujia Sukula², Mahesh Chand³

How to cite this article:

Shipra Awasthi, Shiva Kanaujia Sukula, Mahesh Chand/Open Education, MOOCs and Dialogs with Libraries in Developing Countries: Observations from Trainer's Perspective/Indian J Lib Inf Sci 2021;15(1):35-43

Authors Affiliation:

^{1,3}Assistant Librarian, ²Deputy Librarian, Dr. B. R. Ambedkar Central Library, Jawaharlal Nehru University, New Delhi 110067, India.

Address for Correspondence:

Shiva Kanaujia Sukula, Deputy Librarian, Dr. B. R. Ambedkar Central Library, Jawaharlal Nehru University, New Delhi 110067, India.

E-mail: Shivasukula25@gmail.com

Abstract

The global scenario has witnessed the revolutionary advances of open education, open educational resources, massive open online courses, and academic libraries. The paper aims to create awareness among the users about MOOCs and the stakeholders and academic libraries to understand the problems behind the gap. The current scenario in context with open education and MOOCs for the strengths, opportunities, fragility, and preparedness of trainers relates the potential of academic library contributions and rationality for open education MOOCs. The speculations and responses in the MOOCs training session are shared in the library's situation apart from information services, the library's roles, and trainers' demography, based upon the author's experiences during OE and MOOCs-related training workshop at JNU. The status of the open education movement in a developing country can show a different picture than developed nations.

Key words: Open Education; Open Education Resources; Online Education; Massive Open Online Courses; MOOCs; trainers; JNU; India.

Introduction

The platforms that are internet-based and linked to various other media have created a niche among various kinds of learners and users. The concept of open education (OE) and open educational resources (OERs) has been included in higher education for more than one decade across the globe. The advent of social networking and video podcasts has also been instrumental in providing multifarious opportunities among learners. The factors responsible for its popularity among the students are beyond nationalities, academic backgrounds, technical abilities, interests, etc. The need and identification of students' individual needs, their intensities to learn and collaborate are few major motivating issues to adopt open education in the various sectors and levels of education. The advent of open educational

resources has tried to overcome the students' lack of access to educational material. The concept of equity among the learning has been a primary objective behind the OERs. The methods such as the inclusion of the constructivist approach and task-based MOOCs are influential in the learners' support. The efforts of various countries since 2008 in the area of education are unstoppable and have been proliferating at great speed. The examples are (Coursera, edX, and Udacity from the USA), "FutureLearn" from the UK, and Open2study from Australia. The awareness and usage are discerned in the form of Rwaq in Middle East countries also.

The facilities, such as learning beyond the classroom and a fixed pattern, make the open education within millions of students in various disciplines. The pace and practice of software-based learning among the students is according to their

choice and requirements. There may be differences in opinions of various stakeholders regarding open education and MOOCs in the current scenario. Yet, the practices and popularity narrate an understandable story. The necessity to keep abreast of open digital content, IPR issues, increased information literacy, and awareness creation among the users has opened new vistas in higher education. The ensuing times have hidden opportunities for open education and MOOCs, which are estimated through awareness, involvement, and strategic decisions at a mass level. The recent practices have emphasized increasing involvement and roles of academic libraries in MOOCs' instruction design and establishing more conversations with the students in higher education.

The current times have motivated librarians to look beyond traditional services and include revolutions of open education in the ambiance, such as open content and copyright issues. The present study has tried to give rise attention among the stakeholders, professionals, and scholars in various ways, such as- designing courses, easy process, user-driven approach, organizing events to aware the users and availability of tools, and updating the knowledge skills. The efforts to throw light on open education and learning through various platforms available at one step ahead with the support and contribution of academic libraries with the aspects such as the academic backgrounds, current serving areas and future prospects govern the choices among participants in training programs. With this regard, a training workshop experience at JNU has been highlighted in the study to strengthen the mode of online learning. The changes in higher education in MOOCs' shape have prompted unvisited challenges and solutions for academic libraries.

The academic libraries bring various inputs to the users' attention in open education platforms that are readily available and accessible to enhance their learning process. The paper attempts are moving towards an assessment of the developments in open education and relation of academic libraries in recent literature and share views through a training experience.

Due to various technological innovations, the mechanism in higher education is changing over time and so, are academic libraries' roles. The libraries and scholars need to abridge those mechanisms to prove their higher education capabilities. The higher education sector has found influential mechanisms in the form of open education approaches, altered pedagogical

methods, and library and information services with the advancing opportunities for the learners as well as the teachers.

Higher Education, MOOCs, and Interactions from Academic Libraries

The roles and engagements of libraries in different arena of higher education have been extended since the last decade. The experiences and observations from the literature (Proffitt, 2013; Russell, 2013; Wu, 2013)^{8,10,14} have reflected an expansion in the deliverance of services and training by libraries. The dialogs between the library and academic communities are increasing due to certain aspects such as digital resources, services, and licensed learning content. The characteristics of the library in the higher education system are changing the periphery and scope of massive open online learning scope (Schwartz, 2013).¹² To establish deeper and technical connect, libraries' staff is collaborating with the open education trainers. The changing landscape of open education and library involvement in higher education has been an area of attention recently. Various efforts at library scenarios to engage with a more significant number of students are crucial to understanding higher education's nerve and augment the libraries' interactions with the faculty members and students. Libraries have always been a pivotal influence in the higher education system; the open education and massive intellectual content are also discerning the inclusion of libraries' capacities. Whereas libraries have been providing access to intellectual content, library purview and competence include open education training programs, platforms, and awareness among the students. Even the MOOCs registrants require libraries for further access to digital learning content.

Regarding the MOOCs, the responsibilities of the librarian include them as a solution provider in context with MOOC support, evaluation, and long-term preservation (Massis, 2013).⁶ The further extension of librarians' scope is to create an ambiance of IPR savvy students by providing them opportunities to properly learn copyright aspects related to MOOCs presentations creation and use. Libraries provide instructional support and are involved with faculty members for technical components at different MOOCs development stages. Libraries are outreaching to faculty members to provide access to the open education research tutorials.

The library is functioning as an educational collaborator where a lot of digital information is

yet to be delved and students to be benefited for their academic and professional future, there is much significance of "a broad array of human behaviors such as motivation, online interaction, team collaboration, and learning habits" (Wu, 2013)¹⁴, and academic libraries roles are paving ways for linking to open educational resources and instructing information literacy among the learners. The librarians' involvement has been studied (Testoni, 2014)¹³ in the MOOCs' journey with various contexts such as copyright management and library advocacy along with the inclusion in information services to the students.

The services of libraries are noteworthy in sensitizing the students towards online education. Libraries play a significant role in sharpening the users' skills and assisting them in utilizing them for quality output. The Central Library, JNU conceptualized a workshop to drive the students towards awareness of open education and MOOCs. The importance and benefits associated with such kind courses have also been explained to them by the experts. In this context, the paper further elaborates upon trainers' perspectives and demography of learners, reflecting the diversity of student's disciplines and interests at India's national level.

One day training workshop related to open education, open education resources, and MOOCs was organized by Dr B R Ambedkar Central Library, JNU, which received extensive participation from various corners of the country; the trainers for this workshop enlightened the participants on different aspects of online courses and open education. The experts covered the areas which were of great interest to the participants. Q&A session was the soul of the interactive workshop as discussion with the participants took place in the same session.

Current Scenario and Preparedness among the Stakeholders

The initiatives in the past from 2008 to 2012, in Canada and the USA, witnessed high registrations and involvement of students from an increased number of countries. This reflected the interests and potential to adopt new applications, methods, and challenges in higher education in the global scenario. The choice and compulsion to choose the technology over conventional teaching methods have opened new vistas among the academic stakeholders, including the students. The abilities of technologies and innovative ways to transform education may be affected by the disruptive technologies as well as commercial aspects, which

may require continuous check and assessment for quality control and the objectives of learning in the society. The pedagogical aspects are always under scanner in the context of MOOCs while acting as a substitute for conventional learning platforms. The blended-learning approach can be very impactful in certain disciplines such as science and technologically bent subjects across the other streams.

MOOCs' application and use is still a challenge before a big number of universities, especially in developing nations. This is concerned with the availability of technical infrastructure, digital divide, and potential as the degree's value. Continuous involvement, assessment, and upgrading are required in the context of designing and developing the open education-related components; the MOOCs are specifically in the picture. The teachers' and instructors' responsibilities are increasing, and they also have to understand various aspects of open education, not only the subject knowledge but also the students' behavior in online learning in context with MOOCs. The students' perception and its understanding among the instructors are very significant.

User Behaviors and Experiences in MOOCs

MOOCs' success is associated with quality content, a flexible approach, and an understanding of learner support strategies. The user behavior and patterns are diverse due to individual needs, background knowledge, and skills. The pedagogical approaches are very instrumental in the various learning settings in the context of formal, conventional, and professional MOOCs. The provisions of supervision during the MOOCs and skills levels among the students are the areas that require attention from trainers and instructors. Continuous and regular supervision during the course can play a positive role in the completion of MOOCs.

The teachers' interaction with the students and quality media are favorable factors to support open education learners. The learners' behavior is different in changing contexts and challenging to evaluate and gauge in the myriad number of courses and abundance of opportunities. The learners' experiences are diverse and challenging in an open environment. Their experiences may range from interactive to mundane. Their experiences are well discussed during the last decade (Hilton, Graham, Rich, & Wiley, 2010).⁴ The choices of courses and options of platforms are a few of the deciding factors among the students' behavior and experiences.

Needs and Mechanisms in Higher Education

The technological advances and increasing potential have posed challenges before higher education institutions for considering and opting for the open education system along with their conventional system of education. This approach is beneficial for the education system and learners' both in context with the augmenting the number of courses, opportunities without burdening much on the current infrastructure other than ICT. The estimation and scaling of MOOCs in universities have become a must exercise for the trainers, along with the policymakers. Rodriguez, O. (2013) [9] evaluated MOOCs in higher education in the context of scale and free access. The presence of c-MOOCs and x-MOOCs has changed the views related with the pedagogical model.

The open education framework involves the validation of learning and various aspects of non-formal learning. The types of courses, related disciplines, approaches, and mechanisms play equal roles among the trainers in the higher education arena. The example of "Bildung (self-cultivation, self-realization)" reflects upon the open education framework due to the shift from theory to practice (Deimann & Farrow, 2013).² The argument about the "autonomy, critical reflection, inclusivity, and embracing the potential for self-development" has been a guiding force for OE. Another step is taken in the form of development, while Santos, Yves Punie, and Casta (2016)¹¹ proposed a framework for higher education institutions (HEIs) in context with opening up education. The inclusion of diverse uses, promotion of transparency, and strategic decisions are highly influential. The framework supports pedagogical approaches, increasing collaboration, and the reorganization of modes of learning.

Assessment and Predicting the Grades in MOOCs

The objectives and aims of open education combine to empower the weakest and poorest of society in teaching and learning. MOOCs' assessment and evaluation is a complex task, yet another challenging responsibility among the instructors and trainers. The knowledge of technical aspects and skills is a must for the trainers to assess and grade them. In this context, Piech, Huang, Chen, Do, Ng, Koller (2013)⁷ talked about the difficulties involved and developed algorithms for measuring, assessing, and "correcting for grader biases and reliabilities." Their technique had been instrumental in improving the peer grading accuracy, for example, in Coursera's HCI course offerings. They examined real data with 63,199 peer grades by relating "grader biases and reliabilities." The development of the "Grade

Prediction Algorithm" based on Datasets and Analysis has been instrumental in predictions and evaluations (Yang Brinton, Joe-Wong, Carlee, Chian, 2017).¹⁵ The designing and implementation of MOOCs have witnessed an expansion in the context of technological or assessment issues. The advancement in the pedagogical format is the needs of the times, and various training sessions are provided to the trainers as well. The issues of learners' in the form of lack of learner engagement, low completion rates, and doubts have been observed among the learners. The creations of learning dialogs and interactions between trainer and learner can change the learning and completion trajectories.

Student Engagement and Completion in MOOCs

MOOCs courses' popularity is pervasive, yet the drop-out ratio is very much higher than the registration and completion of courses by the entrants in the MOOCs. In this context, Ye and Biswas (2014)¹⁶ endeavored MOOC analysis in context with "granularity information to make more accurate predictions of dropout and performance." Their findings have emerged as the addition of "final-grained temporal or non-temporal information into behavior features provides more predictive power in the early phases of a POSA MOOC." The factors that may be responsible and helpful in the completion of MOOCs by the learners can relate to understanding the motivating factors for admission and problems encountered by them during the course. In another study, Alraimi, Zo, Ciganek (2015)¹ proposed a model relating to "information systems continuance expectation-confirmation." Identifying goals, efficiency, and value are a few of the significant components related to learner-trainer interaction towards understanding their behaviors and completion, of course.

MOOCs and Teacher-Instructor Aspects

The roles and responsibilities of teachers and trainers have observed the inclusion of ICT-based open education tools in their routine teaching methods. The current scenario has motivated and provided opportunities to alter the pedagogical methods due to OE and OERs. The vast developments of MOOCs have derived versions of training and teaching in higher education. According to Jobe, Östlund, and Svensson (2014)⁵, "MOOCs can be a cost and resource-effective means to deliver quality education to further professional teacher development." The machine learning experiments have become significant in open education, MOOCs platforms, social media websites, and training.

The Initiative at B R Ambedkar Central Library, JNU

In the age of tough competition and limited resources, Ghosh (2015)³ talked about various stakeholders such as academicians, students, libraries, and policymakers in higher education. She mentioned the “tremendous hope for the unprivileged community” as India needs such leveraging technologies for the community in the form of India-centric MOOCs program coined as ‘Study Webs of Active-learning for Young Aspiring Minds (Swayam, i.e., self-learning) in 2014. In this context, while sharing the expiring at OE and MOOCs related workshop, it is observed that there are variances and unexplored facets from students’ and trainers’ perspectives. It is significant to state that academic libraries play great roles in higher education and Dr. B. R. Ambedkar Central Library. JNU has been instrumental in keeping pace with the changing times in the context of innovative application technologies. In this view, the library keeps on organizing various workshops, training programs, and discussions to update the library staff and provide a platform to collaborate with faculty members.

The concept of open education and MOOCs usage is not behind the realization of the need for joint ventures between teaching faculties, instructors, and library staff. The library endeavored to bring these stakeholders to a single platform to learn and interact by updating themselves through a national-level workshop. This training workshop, organized during the month of February 2020, invited attention from various organizations, subject fields, and professionals. These individuals' participation reflected the collective learning efforts and objectives behind the open education movement around the globe and its pervasive presence across the country. The data has been collected during the training workshop. It has been

reflected through the following tables categorized and organized according to the following aspects:

- Demographic information
- Regional coverage of participation
- Subject areas
- Trainers and their specializations
- Topics covered
- Interaction and Feedback aspects

Demographic Information

Table (1) reflects the information about various types of professionals according to their designations. The diverse nature of their designations reflects the requirements among the professionals at various levels. It shows that the teaching faculties and professionals of different strata observe the need to update themselves about the current developments in the field of open education and MOOCs. The range of participants is comprehensive and covers the professionals working as library professionals and teaching community, including research scholars and directors in different areas. The high number of research scholars shows the initial awareness among them about the OE and MOOCs, of course, the demand to learn more to become fluent in such a course as a user and as an instructor in the future.

Table: 1 Demographic information: types of professionals.

Sl. No.	Designation	No. of Participants	%
1	Library Professional	54	28.4
2	Doc. Officer	5	2.63
3	JRF/SRF	2	1.05
4	Deputy Director/Reader	6	3.15
5	Research Scholar	112	58.94
6	Professor	12	6.31
	Total	190	

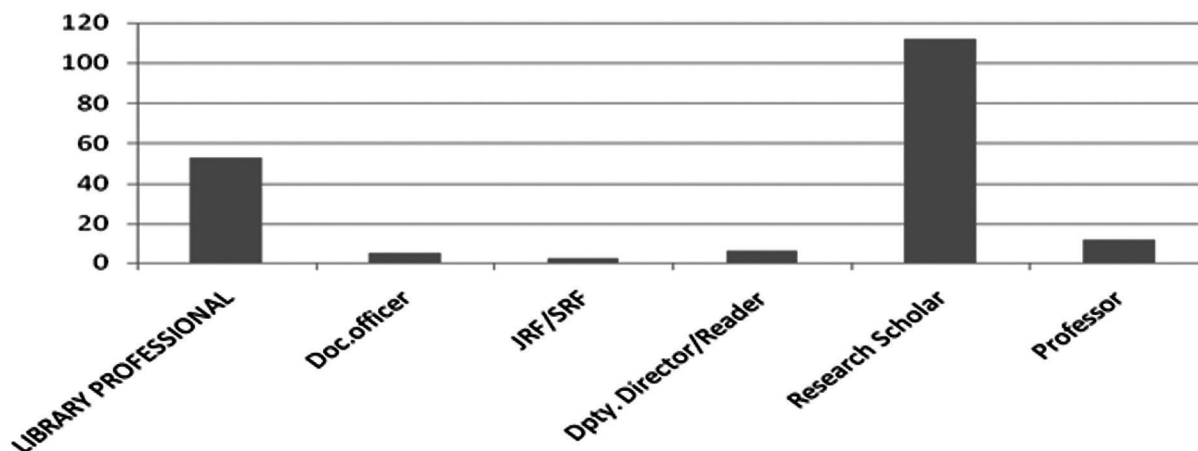


Fig. 1: Demographic Information: Types of Professionals.

Table 2: Regional Coverage of Participation.

S. No	Affiliation	No. of Participants	%
1.	Agra College, Agra	1	0.52
2.	AIIMS, New Delhi	1	0.52
3.	Aligarh Muslim University, Aligarh	2	1.05
4.	Ambedkar University, Delhi	2	1.05
5.	Amity School of Information Technology	1	0.52
6.	Babasaheb Bhimrao Ambedkar University, Lucknow	1	0.52
7.	Bangladesh Agricultural Research Council	1	0.52
8.	Bharat Institute of Technology, Meerut	1	0.52
9.	Chaudhary Bansilal University	1	0.52
10.	Dayalbagh Educational Institute (Deemed University), Dayalbagh, Agra,	2	1.05
11.	Delhi Library Association	1	0.52
12.	Gautam Buddha University, Greater Noida	2	1.05
13.	GDC Tangmarg College	1	0.52
14.	ICAR-Indian Institute of Horticultural Research	1	0.52
15.	IGNCA	1	0.52
16.	IGNOU, Delhi	7	3.68
17.	Indian Institute of Technology (ISM) Dhanbad	1	0.52
18.	Jaipuria Institute of Management	1	0.52
19.	Jamia Millia Islamia	3	1.57
20.	Jawaharlal Nehru University	126	66.31
21.	Ministry of Culture	1	0.52
22.	NASSDOC ICSSR	1	0.52
23.	National Institute of Health & Family Welfare	2	1.05
24.	National Law University, Delhi	1	0.52
25.	NCERT	1	0.52
26.	NIFTEM	1	0.52
27.	NIT	1	0.52
28.	Oriental University	1	0.52
29.	Raj Rishi Bhartrihari Matysa University, Alwar, Rajasthan	1	0.52
30.	S. V. Subharti University	1	0.52
31.	School of Social System	1	0.52
32.	Sh. Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeetha, New Delhi	3	1.57
33.	The Aaryans	1	0.52
34.	Tilka Manjhi University, Bhagalpur, Bihar	1	0.52
35.	University of Delhi	14	7.36
36.	University of Kashmir	3	1.57
		190	

Regional Coverage of Participation

Table (2) and figure (2) inform about the participation from various kinds of institutes located in various parts of nations, though the nearby areas have reflected the participation instead of far-located places. Participants from public and private universities, research institutions, and colleges have found this training program useful and attended.

The convenience and other factors might be responsible for participation in the training program. Participants from the state of Delhi, Rajasthan, Uttar Pradesh, Jammu & Kashmir, Bihar, Jharkhand, and Haryana were benefited in this training program.

Subject areas of Participants

Table 3 shows the multiple areas of disciplines, to which participants belonged. Most of the participants were from the social sciences. The second field was languages and literature. Few of the participants were from the arts and humanities. The number of science and technology participants was far behind in comparison to social sciences. The popularity among the social science participants reflects the current awareness and demand for open education among these scholars.

The comparison among the subjects/disciplines presented here shows that there is a need to provide more information to create awareness among S&T scholars about open education and various modes of learning other than conventional classroom teaching. Creating interactive workshops, sending flyers, etc., can induce the availability of information and such courses among scholars other than social sciences.

Trainers and their specializations

The related table (4) reflects the number of experts and their specialization. These experts contributed as trainers for the workshop and provided learning. The diversity among these trainers was significant to play roles in answering the queries of participants from different backgrounds.

The specializations in e-learning, open education methods, and tools, open distance learning (ODL) have been very instrumental in keeping the pace of the training schedule as well as curiosity among the learners. The mixed subject approach was crucial in satisfying the multi-directional questions of the participants.

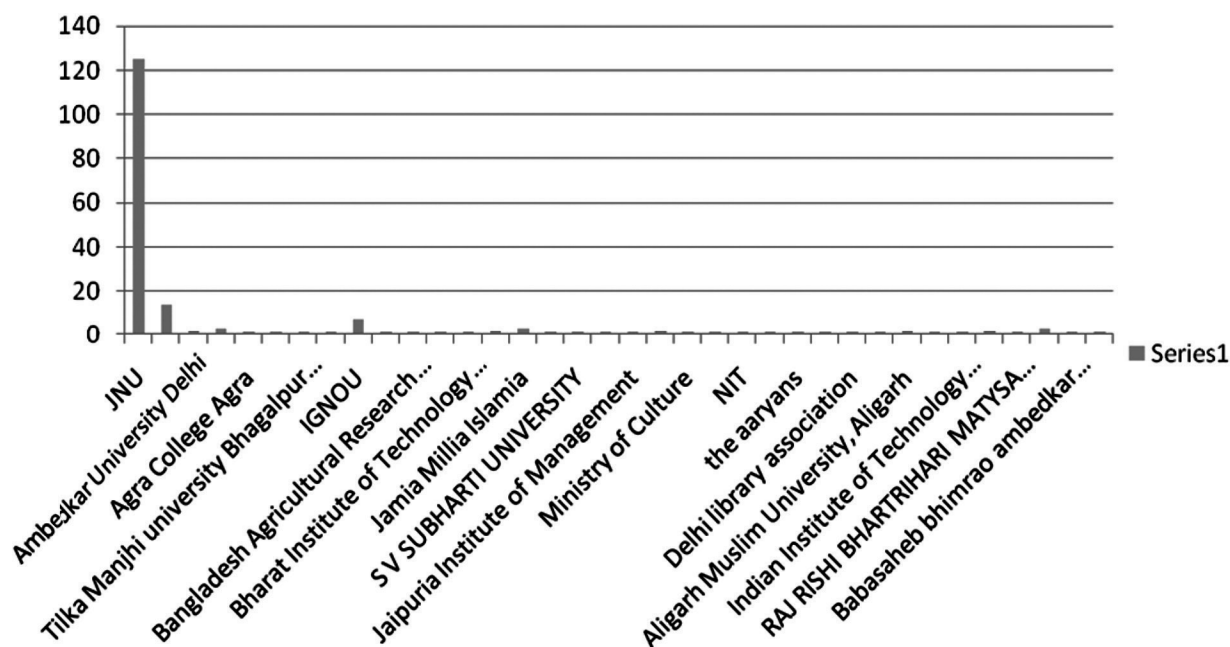


Fig. 2: Regional coverage of participation.

Table 3: Subject areas of Participants.

Sl. No.	Subject	No. of participants	%
1.	Arts & Humanities	05	2.63
2.	Language & literature	16	8.42
3.	Science and Technology	08	4.21
4.	Social Science	152	80.0
5.	Others (Phonology, Media, visual culture, Fluvial Geomorphology, Wetland system, Environmental politics)	05	4.73
6.	Not mentioned	04	2.10
	Total	190	

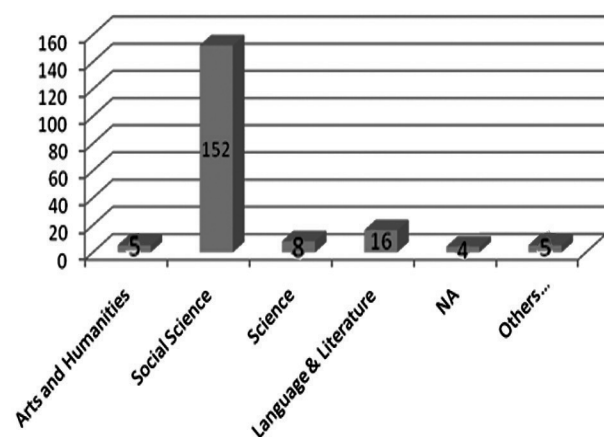


Fig. 3: Subject areas of Participants.

Table 4: Trainers and their specializations.

S. no	Trainers	Rank	Specializations
1.	01	Professor	E-learning, distance learning, open education
2.	01	Associate Professor	Science and Technology e-learning
3.	01	Assistant Professor	Research Methodology, ICTs in Education/ODL and Teacher Education.

Topics covered by Trainers

Table (5) shows the aspects covered during the training program by the subject experts. The initial session was devoted to the Basics of open education, open educational resources, massive open online courses. The awareness among the participants was created through these sessions and concepts discussed to enlighten them. Later, the conceptual information of MOOCs, various technological components, how to use, and some light upon usage and popularity was thrown. In the last Information about Indian initiatives, various Indian platforms for open education and MOOCs were provided. In this context, the introduction and roles of MOOCs platforms were very relevant and informative among the participants. The knowledge about "SWAYAM PRABHA," an open education initiative, was highlighted, which invited

not only attention but also many queries from the participants. These sessions and topics covered the knowledge about the open education initiatives and MOOCs, as well as the technical aspects, such as registering process, evaluations, assessments, and advantages of MOOCs. The interactions in-between the sessions disclosed the curiosity level of participants and enhancing their knowledge.

Table 5: Topics covered by the trainers.

Sl. No.	Topics	Components
1.	OERs, MOOCs & Online Programs	Basics of open education, open educational resources, massive open online courses
2.	MOOCs: A Basic Introduction	Conceptual information of MOOCs, technological aspects, usage and popularity
3.	Reaching the unreached through Television SWAYAM PRABHA- a GOI initiative	Information about Indian initiatives, Indian platforms for OE, and MOOCs, introduction and roles of "SWAYAM PRABHA" open education portal.

Interaction and Feedback Aspects

During training sessions, the discussions have been revolving around the educational and technical aspects related to open education and MOOCs. The questions were mostly from the learning components and their relevance in the current scenario. The assessment and evaluation facets were also among the doubts among the participants. The accreditation and value in future may augment, was also one of the subsequent fringe benefits, apart from the learning through MOOCs, collateral to the conventional education. The legalities and validity of courses in contemporary times resemble the stumbling blocks in the system of open education and MOOCs. Any predicaments to be faced have been a concern of many participants. Potential analogous instructions and learning outcomes need to be addressed.

Conclusion

The innovation in each direction of education has appealed to the students, instructors, and policymakers. The ICTs implementations have accentuated progressive thinking. The concepts of societal and economic growth seem to come true in the perspective of Open education and increasing interests of students and trainers. The facets such as awareness of various open education platforms, application and registration formalities, evaluation processes, and completion need to be disseminated

across the Indian subcontinent. The reasons for low awareness, participation, and completion of the courses should be identified. The drop-out ratio is high, and characteristics associated with such incidents invite detailed investigations to relate to the influences. This study would help scholars understand the concept and benefits of online learning. It would also motivate the professionals to organize seminars/workshops/lectures on online education and learning, the tools involved in teaching-learning.

The institutions need to set an example for other organizations to hold events that can create awareness and attract the scholars for enrollment. Such courses need to be scholar-driven, not instructor-driven, that can match the skill and literacy required in the employment market. The library has a vital role to play in educating the students regarding the significance of online courses. It can support the stakeholders during MOOCs development and preservation processes and organize awareness workshops to assist them in the enrollment process. Libraries can also become instrumental in communicating the stakeholders from the students' view and trainers' perspective to prepare the user-friendly open education process in developing countries.

References

- Alraimi, Khaled M., Zo, Hangjung, Ciganek, & Andrew P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. *Computers & Education*, 80, 28-38.
- Deimann, M., & Farrow, R. (2013). Rethinking OER and their use: Open education as Bildung. *The International Review of Research in Open and Distributed Learning*, 14(3), 344-360. <https://doi.org/10.19173/irrodl.v14i3.1370>.
- Ghosh, Maitrayee (2015). The rise of MOOCs and roles for libraries. Available at https://www.researchgate.net/publication/283319826_The_rise_of_MOOCs_and_roles_for_libraries/link/563320f808ae911fcd497682/.
- Hilton, J. L., Graham, C., Rich, P., & Wiley, D. (2010). Using online technologies to extend a classroom to learners at a distance. *Distance Education*, 31(1), 77-92.
- Jobe, W., Östlund, C. & Svensson, L. (2014). MOOCs for Professional Teacher Development. In M. Searson & M. Ochoa (Eds.), *Proceedings of SITE 2014--Society for Information Technology & Teacher Education International Conference* (pp. 1580-1586). Retrieved April 13, 2020 from <https://www.learntechlib.org/primary/p/130997/>.
- Massis, B.E. (2013). MOOCs and the library. *New*

- Library World, 114 (5/6), 267-270. <https://doi.org/10.1108/03074801311326894>.
7. Piech, Chris, Huang, Jonathan, Chen, Zhenghao, Do, Chuong, Ng, Andrew & Koller, Daphne (2013). Tuned Models of Peer Assessment in MOOCs. Proceedings of the 6th International Conference on Educational Data Mining (EDM 2013). arXiv:1307.2579v1.
 8. Proffitt, Merrilee (2013). MOOCs and Libraries: New Opportunities for Librarians. April 16, 2013. Available at <https://hangingtogether.org/?p=2781>.
 9. Rodriguez, O. (2013). The concept of openness behind c and x-MOOCs (Massive Open Online Courses). Open Praxis, 5(1), 67-73. International Council for Open and Distance Education. Retrieved April 13, 2020 from <https://www.learntechlib.org/p/130655/>.
 10. Russell, Judith Coffey (2013). The library's role in implementing MOOCs. University of Florida | Mar 08, 2013. Available at <https://libraryconnect.elsevier.com/articles/librarians-role-implementing-moocs>.
 11. Santos, Andreia Punie, Yves & Casta, Jonatan (2016). Opening up Education: A Support Framework for Higher Education Institutions. No JRC101436, JRC Working Papers. <https://econpapers.repec.org/paper/iptiptwpa/> and <https://publications.jrc.ec.europa.eu/repository/handle/JRC101436>.
 12. Schwartz, Meredith (2013). Massive Open Opportunity: Supporting MOOCs in Public and Academic Libraries. May 11, 2013 | Filed in News. Available at <https://www.libraryjournal.com/?authorName=Meredith%20Schwartz>
 13. Testoni, Laura (2014). MOOCs and academic libraries: a chance or a problem? An overview. J LIS.it, 5 (1). DOI: <http://dx.doi.org/10.4403/jlis.it-9072>.
 14. Wu, K. (2013). Academic libraries in the age of MOOCs. Reference Services Review, 41 (3), 576-587. <https://doi.org/10.1108/RSR-03-2013-0015>.
 15. Yang, Tsung-Yen; Brinton, Christopher G., Joe-Wong, Carlee & Chiang, Mung (2017). Behavior-Based Grade Prediction for MOOCs Via Time Series Neural Networks. IEEE Journal of Selected Topics in Signal Processing, 11(5), Aug. 2017.
 16. Ye, C., & Biswas, G. (2014). Early Prediction of Student Dropout and Performance in MOOCs using Higher Granularity Temporal Information. Journal of Learning Analytics, 1(3), 169-172.
 17. http://www.ignou.ac.in/ignou/aboutignou/school/soss/schoolboard/detail/Dr__Uma_Kanjilal-157.
 18. <https://www.jnu.ac.in/content/bsbalaji>.
 19. http://www.ignou.ac.in/ignou/aboutignou/school/soe/faculty/detail/Dr_Gaurav_Singh-4446.
-