

Education On Rural Development on MOOCs Platforms in India: An Analysis

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Abstract: This research provides a current scenario MOOC course on rural development in India and looks at how the courses are structured. Additionally, it covers important rural development subjects through an online survey hosted on four of the most popular MOOC websites in India. According to the study, 43 courses covering various aspects of rural development are offered in India. The study concludes by outlining issues with MOOCs courses for rural development and suggestion for it.

Keywords: MOOC, Rural Development., Online Education, Information and Communication Technology.

1. Introduction: The term "rural development" describes the massive and continuous socio-economic initiatives meant to improve every facet of rural living. In the past, it has focused on making use of resources found on land, such as agriculture and forestry. However, the character of rural areas has changed dramatically as a result of growing urbanization and changes in global industrial networks. Thus, it's critical to stay current with rural development trends. Massive open online courses, or MOOCs, are the ideal substitute in this situation. MOOCs are online courses that let users enroll in any course they want with no restrictions and free access. This course is specifically designed for young professionals and students studying rural development. It equips them with the knowledge and abilities to recognize important issues and trends in rural areas, analyses population dynamics and important issues like land access, employment opportunities, and services, discuss innovative rural development practices, assess the potential for development in particular rural regions, and suggest strategies tailored to that region and aims for fostering the productivity, stability in social and economic advancement, ambition, and socioeconomic equality.

1.2. : Brief History of MOOCs: George Siemens, a Canadian educator, advocated the Connectivism theory to explain the changes in education that have occurred as a result of the use of technology both within and outside of the classroom. Based on this hypothesis, George Siemens (Canada, Athabasca University) and Stephen Dowles (Canada, National Research Council) designed an open-access online course. The course was designated as CCK/2008, or Connectivism and Connective Learning. The National Institute for Technology in Liberal Education's Senior Research Fellow Bryan Alexander and the University of Prince Edward Island's Dave Cormier came up with the term MOOC in response to this course.

Another concurrent phenomenon was the rise of Salman Khan, an American of Bangladeshi

descent. Apple introduced iTunes U in 2007, offering educational podcasts, films, books, and audiophile works for download.

It would be accurate to describe the aforementioned three as the forerunners of the MOOC as it exists today. The first course offered under the MOOC banner was a 2011 Stanford University course in artificial intelligence designed by Sebastian Thrun and Peter Norvig, which attracted 160,000 online registrants.

While MOOCs have arguably been around for decades, Dave Cormier is credited with coining the term “MOOC” to describe the Connectivism and Connective Knowledge course delivered by George Siemens and Stephen Downes in 2008. This course was undertaken online, for free, by over 2000 people around the world.

Fast-forward to today, and a proliferation of *MOOC providers* have emerged including several big players. For example, Coursera offers over 300 *MOOCs* on its platform, while earlier this year Udacity’s Introduction to Computer Science class attracted over 300,000 students.

Numerous prestigious universities have since jumped on the bandwagon. Some universities provide their own online courses, such as Yale University's Yale Online and Harvard University's Harvard Online, however not all of them are free. Coursera and other similar websites offer one of the best global collections of free courses available for use.

1.3. : Overview of the MOOCs: Massive Open Online Courses (MOOCs), which have revolutionized the teaching and learning process, are defined by the Oxford Dictionary as "a course of study made available over the Internet without charge to a very large number of people." It was first developed in first-world nations like the United States of America, the United Kingdom, and others. Through the introduction of characteristics like campus-free, huge, and free enrollment, virtual teaching and learning, a globe of open-access course materials, etc., MOOCs have drastically altered the traditional education system by utilizing Web 2.0 technology. In 2008, Dave Cormier, the manager of digital communication and innovations at the University of Prince Edward Island in Canada, first used the phrase MOOCs. The first MOOC was a popular artificial intelligence course taught in 2011 by Stanford University's Peter Norvig and Sebastian Thrun. More than 1,60,000 participants from all around the world enrolled in this course to learn together, making it the largest student-to- teacher ratio in history.

1.4 : Characteristics of MOOCs: The acronym “MOOC” stands for *Massive Open Online Courses*. The term "massive" here refers to the fact that there is no cap on the total number of students who may sign up for the course. The term "open" indicates that enrollment in this course is not subject to any requirements. These are highly interactive, multimedia-rich online courses that provide students with an exceptional opportunity to learn at their own pace via the internet using a *four-quadrant approach*: e-Tutorial, e-Content, Discussion Forum, and Assessment. MOOCs are based on the 3As, or Anytime, Anyone, anywhere. Thus, it's an online education that's accessible to everyone and is offered on a large scale over the internet.

- a) **Quadrant Approach:** One of important feature any MOOCs is ‘Four quadrant approach’: the four Quadrant approach means e-learning system that has the following components:
Quadrant-I is e-Tutorial: which shall contain: Video and Audio Content in an organized form, Animation, Simulations, video demonstrations, Virtual Labs, etc.

Quadrant-II is e-Content: which shall contain: PDF, Text, e-Books, illustrations, video demonstrations, documents and Interactive simulations wherever required.

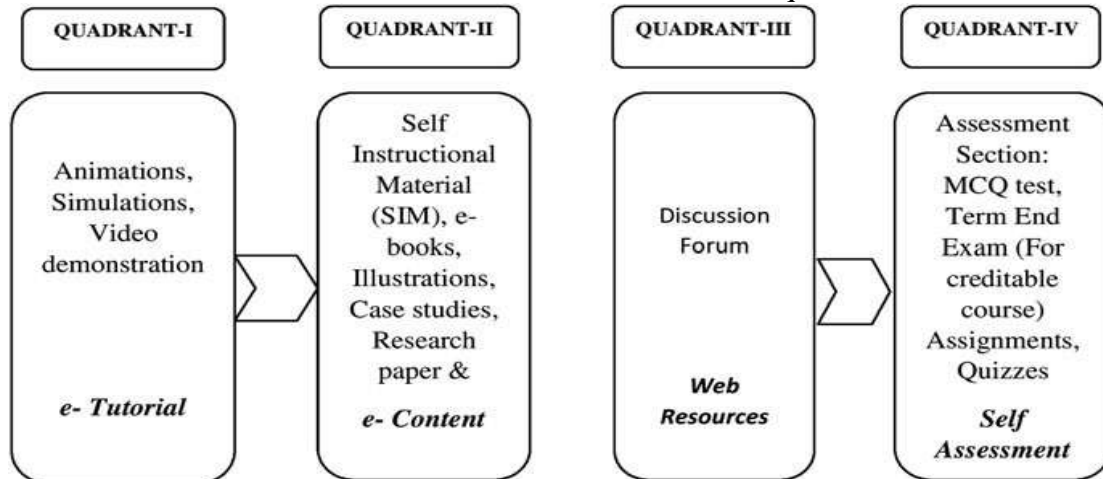


Figure 1: Four Quadrants of MOOCs

• **Quadrant-III is Web Resources:** which shall contain: Related Links, Wikipedia Development of Course, Open-source Content on Internet, Case Studies, books including e-books, research papers & journals, Anecdotal information, Historical development of the subject, Articles, etc.

Quadrant-IV is Self-Assessment: which shall contain: Problems and Solutions, which could be in the form of Multiple-Choice Questions, fill in the blanks, Matching Questions, Short Answer Questions, Long Answer Questions, Quizzes, Assignments and solutions, Discussion forum topics and setting up the FAQs, Clarifications on general misconceptions.

- b) **Use of Several Web Format:** Several web formats are a major component of MOOCs. As a result, a vast majority of courses are made up of user-streamed videos that have already been filmed. Tools like Vimeo and YouTube are frequently utilized to make content. Live-streaming can also be used by MOOCs to simulate a classroom setting. Students have a rare chance to speak with the trainer face-to-face and ask questions
- c) **Collaboration Learning:** Every effort is made to replicate the in-class environment during a MOOC, including the utilization of collaboration technologies. MOOCs facilitate the creation of learning communities where the contributions of each participant enrich the course, as opposed to a vertical distribution of knowledge. Collaboration can be fostered and developed through Facebook groups, meetups, peer corrections, and social Q&A forums (advanced forums with voting features).
- d) **Evaluation of Knowledge:** MOOCs provide instruments to evaluate the transmission and recall of this knowledge. These modules, which typically take the shape of multiple-choice examinations, pre-programmed exams, or essay problems that are automatically corrected by teachers or peers, contribute to making courses more dynamic and participatory. MOOCs also have the option of awarding certificates to students who finish the course. These qualifications are MOOCs also have the option of awarding certificates to students who finish the course.

- e) **Time Constraints:** Time constraints is one of the characteristics of MOOCs. MOOCs have defined beginning and ending dates. Every week, the course's materials—documents, videos, exercises, etc.—are given in order. The student's coursework is distributed across time. The course content can be organized temporally to create the impression of a succession of little events and to facilitate the development of an effective communication plan that includes email updates, teasers, and other materials. It's also a good way to make sure the MOOC looks and feels like a regular, weekly attended course.
- f) **Freedom of choice:** MOOCs provide participants the freedom to select what, where, when, how, and even with whom to learn;
- g) **Diversity of Courses:** MOOCs attract a wide range of students from around the globe and encourage a diversity of readings and ways of thinking
- h) **Connectedness:** Through MOOCs, people are constantly interacting with each other and trying to build knowledge;
- i) **Self-paced:** MOOCs provide autonomy to learners to decide how and when they like to learn the MOOC's contents;
- j) **Lifelong Learning:** Learners improve their lifelong learning skills by participating in a MOOC;
- k) **Recognitions and Certificates:** Most MOOCs award some kind of recognition for successful completion of a course based on a final computer-marked assessment

1.5. Advantages of MOOCs:

- ❖ **Flexibility.** MOOCs let learners access courses from anywhere and usually at any time.
- ❖ **Personalized and customizable learning paths.** Learners can also design an educational experience based on what they want or need to learn, rather than taking a prescribed series of courses as required by traditional degree-awarding educational institutions.
- ❖ **Extended community.** Many MOOCs include opportunities for students to interact, allowing learners to make new connections and engage in a community of people with similar interests.
- ❖ **Cutting-edge curriculum.** Access to courses offered by professors at the top schools Because MOOCs aren't tied to traditional academic schedules, with courses offered by semesters or prescheduled periods, instructors can more easily create, launch and update courses as required.
- ❖ **Greater access to high-quality instruction.** Courses are available to a vast and diverse audience across the globe. Highly selective academic institutions, large corporations and notable experts from a range of fields create and offer MOOCs. "We can bring the best-of-the-best instructors to the world.
- ❖ **Democratization of learning.** Given such advantages, MOOCs democratize education by removing barriers such as high costs, rigid schedules and geographic attendance requirements, giving anyone with an internet connection the ability to participate in courses covering a vast range of topics.
- ❖ **Workforce upskilling at scale.** MOOCs also offer organizations the ability to upskill their workers at scale and at velocity, enabling organizations to more easily adjust to changing market needs. Furthermore, MOOCs let organizations upskill workers with limited disruptions to their lives.
- ❖ **Learning Techniques and management:** MOOCs are helpful in managing learners'

performance can be monitored easily using the data captured during the start of courses.

1.6. Challenges of MOOCs: Some challenges of MOOCs are mentioned below:

- ❖ **A potential for a disconnected and/or boring experience.** The MOOC online learning experience might not engage all learners. On a related note, content delivered by MOOCs, particularly those that deliver instruction asynchronously and don't have any real-time participatory sessions, can become boring.
- ❖ **A mismatch with personal learning styles.** MOOCs might not successfully educate learners who require lessons beyond lectures, presentations, videos and other online learning staples. Such learners might need, for example, more one-on-one instructor time or more experiential learning opportunities than typically offered via MOOCs.
- ❖ **The high degree of required self-motivation and self-discipline.** Students taking traditional courses must show up to required classes and complete assigned work, but they're also more likely to have instructors holding them accountable and/or a substantial financial investment that keeps them on track. Learners enrolled in MOOCs don't have those same elements to motivate them, making it harder for many to commit the time and effort necessary to finish a course.
- ❖ **A lack of direction.** The plethora of options can be a drawback for learners who need guidance on what courses to take to gain the desired skills or knowledge. Some MOOC platforms help on that front, but others do not.
- ❖ **Undetermined and questionable quality.** Both the increasing number of MOOCs and MOOC providers can make it difficult for learners to determine whether they're signing up for quality instruction. Online reviews help guide learners, as do platforms that are selective about their offerings. However, many online learning platforms don't have the same oversight of coursework and instructors that exists in traditional academic institutions.
- ❖ **Mixed reception in the job market.** Recruiters and hiring managers want candidates who demonstrate a commitment to ongoing learning. Yet they're often reluctant to credit candidates for courses they've completed unless they can demonstrate a mastery of the material via a degree, certification, license or assessment. Similarly, employers might not credit job candidates and existing employees for MOOCs created by unfamiliar entities, no matter how good the course content is.
- ❖ **Internet Connectivity:** Learners with disabilities and a poor Internet connection can't use MOOCs.
- ❖ **Languages Barrier:** Language can be a barrier while offering MOOCs as most of the are offered in English language
- ❖ **Lack of Proper guidelines on evaluation and Credit Transfer:** MOOCs can't be used as a credit-earning course at some universities and it is difficult to keep track of students' assignments and involvement

1.7. : Applications of MOOCs in Education for Rural Development: The following are some of the main advantages of MOOCs for education and rural development:

- ❖ **Facilitation of Cost-Effective Learning:** MOOCs in rural development education will provide workers and rural residents with an affordable method of learning. Professionals in rural development and other interested parties who are unable to leave their homes for a variety of reasons, such as monetary or personal issues, benefit from MOOCs.
- ❖ **Building Capacity and Providing Training to Employees for Rural Workers:** In India, the majority of gramme panchayats and other rural institutions operate with a shortage of professional

staff. Professionals in the field of rural development education will have the chance to expand their knowledge and influence a larger audience through MOOC courses covering various topics.

- ❖ **Communication and discussion with a large audience and Promotion of Rural Organization:** It helps events, goods, services, and areas of competence. meets the requirements for corporate social responsibility. MOOCs for rural development will provide a time-saving learning option for all. It promotes the growth of knowledge, abilities, and a worldwide community around a subject.
- ❖ **Professional development and Capacity Building:** MOOCs offer employees the chance to enhance their professional development, enabling them to progress in their careers while maintaining their motivation at work. MOOCs can be helpful in upskilling professionals and employees in rural sector by enhancing their employees' skills in emerging technologies or business procedures, allowing them to maintain a competitive edge and enhance their overall financial performance and in reskilling employees facing job displacement due to technological change.
- ❖ **Gender Awareness:** MOOCs are a great way to raise awareness of gender issues. MOOC platforms can be utilized for women's awareness campaigns as well as various income-generating courses like tailoring and boutique. The first Massive Open Online Course (MOOC) on Gender Equality and Diversity in Forest-Related Sectors (For GEDi) was developed by the IUFRO Task Force on Gender Equality in Forestry with sponsorship from SLU Global and the University of Padova in an effort to close the educational gap.
- ❖ **Promotion of Literacy and Skill Development:** MOOCs have a great deal of potential to help people in rural and remote areas develop their literacy and skill sets. Rural kids and adults can upskill through MOOCs, which will benefit their employment prospects. Additionally, it will support education in complementary ways or, in some situations, as a significant substitute for education in at-risk rural schools, urban slums with overcrowded schools, and remote villages without schools.
- ❖ **Extension, Training and development in agriculture and its allied activities:** MOOC courses are beneficial for agricultural extension. One such was the Massive Open Online Course (MOOC) on Farm Data Management, Sharing, and Services for Agriculture Development, which was developed in 2019 in collaboration with the Food and Agricultural Organization of the United Nations (FAO), the Technical Centre for Agricultural and Rural Cooperation (CTA), and the Pan African Farmers' Organization (PAFO). One example is MOOC for animal husbandry, or "*Animal Behavior and Welfare*," which were created by the University of Edinburgh's Jeanne Marching International Centre for Animal Welfare Education in collaboration with researchers studying animal welfare at Scotland's Rural College.
- ❖ **Preservation of Cultural Legacy:** If a course has any cultural legacy, MOOCs can also aid in the preservation of tangible or intangible cultural heritage. Because MOOCs are available online, they will aid in the preservation of cultural legacies.
- ❖ **Community Development:** Through community-led MOOCs, underserved groups 'complicated reality and way of life may be better understood and integrated. It will use scientific research and local expertise to further a social goal.

2. : Review of Related Literature:

The function of Massive Open Online Courses (MOOCs) in Indian higher education is examined by Banwari (2018). The growth of the Gross Enrollment Ratio (GER) in higher education is mostly due to MOOCs. Lack of industrial application is one of the main issues facing Indian higher education. The majority of MOOCs are directly tied to the needs and demands of the industry. Massive Open

Online Courses (MOOCs) are an affordable option for learning for those in rural areas of India, where the majority of the population lives and cannot afford to receive a decent education.

Jordan (2019) in her paper seeks to draw together the data that has found its way into the public domain in order to explore factors affecting enrolment and completion providing a more detailed view of trends in enrolment and completion than was available previously, and a more accurate view of how the MOOC field is developing.

Malik (2015) in his paper 'Indian MOOCs (Massive Open Online Courses): Need of the hour' discusses the concept, features and role that MOOCs can play in Indian context and already existing popularity in terms of participation by Indian students in MOOCs over famous platforms such as Coursera, EdX and Udacity.

Liyanagunawardena (2013) in the paper discusses features of MOOCs and looks at them from a developing countries' perspective to conclude that due to a complicated set of conditions ('access', language, computer literacy among others) prevailing in developing countries, MOOCs may not be a viable solution for education for a large proportion of people in these areas of the world and it shows the need for more data on the demographics of MOOC participants from developing countries to form a better understanding of MOOCs role in educating people from developing countries.

Chauhan (2017) in her paper 'An Overview of MOOC in India' discusses theoretical and technical background of the platforms available in India. Currently, NPTEL, mooKIT, IITBX, and SWAYAM are the platforms used in India for offering courses. In recent years, the enrolment in Massive Open Online Course (MOOC) has increased tremendously. India after US is dominating the global growth in enrolments. Seeing the growth of enrolment from the country and satisfy their need of education, India has started various projects for offering MOOC courses. There are some challenges that are faced in implementing MOOC in India. With the launch of SWAYAM, some of these issues are already addressed.

Kumar (2007) presented in this paper, various facets of e-Learning in India, present status of e-Learning activities, major organizations & their technologies for creating e-Learning information systems, regulatory framework, government initiations, impact of e-Learning technologies on the education system and it includes a framework of e-Learning for rural India and a business case of implementation of e-learning "knowledge hubs" in Aligarh district of Uttar Pradesh.

The factors which influence e-learning adoption in India are discussed by Vanitha and Alathur (2021) in their study which identifies technology and learner dimension factors that influence e-learning adoption in developing countries like India by putting forward implications and policy recommendations from the findings.

Castillo et. al. in 2015 has observed of massive open online courses (MOOCs) has generated disruption in the traditional modes of education through ease of access and free or low-cost content delivery most underserved regions of the world by reviewing trends in MOOCs.

Buhl, M., & Andreasen, L. B. (2018) in their work 'Learning potentials and educational challenges of massive open online courses (MOOCs) in lifelong learning.' discusses about benefits and challenges of MOOCs.

Chigbu (2015) in his paper presents concept of 'Ruralisation' and its relation with MOOCs. that development practitioners have either not heard of or not read, or have chosen to ignore – ruralisation. Unlike urbanization in urban studies, ruralisation is rarely used as a concept in rural research. By challenging existing notions about the use of the concept, this article attempts to (re)introduce ruralisation as a fundamental concept in rural studies and presents its conceptual framework for rural transformation using MOOCs as one of the tools.

Scott et. al. in 2019 in their study summarizes an innovative educational partnership between the course team and one of these countries, Rwanda, to develop a blended-learning model to bolster

participation in this new course among Rwandan healthcare professionals. In this paper, they described this innovative public-private educational model, challenges to implementation and lessons learned that may be helpful for future MOOC developers who wish to augment learning opportunities among healthcare professionals in LMICs.

The study by Jauhari in 2020 focused on identifying the factors which have an effect on the learner satisfaction in online courses (MOOC), and thus based the objective on it. This research had also kept its focus only on India and Indian respondents, and had identified factors more to this suitable geography. The learner satisfaction from MOOCs was researched on eight factors – level of interaction, networking opportunities, course pedagogy, course content, course site/portal, presence of technology, assessment features, and feedback sharing mechanisms.

Zao in the article seeks suggest MOOCs as suggestion to developmental imbalance in China by exploring the potential of online education (MOOCs) as a solution. and summarizes and highlights the educational inequality problems in urban education in terms of enrollment indicators and school funding support. The paper also acknowledges the need to tailor MOOC course design to meet students' needs and improve learning outcomes in different educational contexts.

Yadav and Tiwari (2016) in this research paper shows through the discussion of it and its types that e-learning can be an effective tool for development of rural India if it is properly implemented. While Goldberg and Crocombe (2017) said that MOOCs would also appear helpful to facilitate effective communication among international communities of patients and clinicians, including student clinicians, with shared interests.

Gujman (2021) in the article aimed to identify which individual, institutional, academic and socio-economic characteristics influence rural student dropout in virtual undergraduate programmes in Colombia. For this purpose, an exploratory, quantitative and cross-sectional study was proposed, with a sample of 291 students to whom a student characterization instrument and a classroom evaluation instrument were applied.

3. : Research Questions: The research questions formulated for this study are:

- a) What are the major MOOC platforms for developmental research particularly in rural development?
- b) What are the major topics in rural development among the courses offered by different MOOCs platforms?
- c) What is the preferred language medium of instruction for conducting MOOCs for rural development and allied areas in India?

4.: Objectives of the Study:

- a) To know the concept of MOOC's and its importance in Rural Development education.
- b) To find out the major MOOCs providers in Development Studies domain particularly in Rural Development domain.
- c) To explore the courses offered by selected MOOCs platforms in India in Rural Development and related areas.
- d) To identify the preferred language(s) of instruction for conducting MOOCs for rural development and allied areas in India
- e) Identify the Challenges in facilitating MOOCs in Rural Development education sector and institutions.
- f) To discuss about recommendations about integrating MOOCs for Rural Development education for Institutions.

5. : Scope of the Study: As it can be observed from the review of literature that the literature on MOOCs related with rural studies or rural development is very less and most of the literature are focused on historical development and general issues of MOOCs, there is a lacuna in published literature This study will be helpful in identification of Major MOOC platforms for rural development domain, and in designing of MOOCs on others topics.

6. History of MOOCs in India:

The Indian government has launched numerous programmes to encourage online learning, which in the end helped many individuals finish their education and raised the country's enrollment rate. edX, SWAYAM, NPTEL, mooKIT, and Coursera are some of the well-known Indian online platforms. In addition to the platforms listed above, there are additional, less well-known ones that offer online education in a variety of fields. The list of Indian online education providers is as follows: *Vskills, Million Lights, Apna Education, Up Grad, EduKart Open, Learn Vern, Digital Vidya, SWAYAM, NPTEL, mooKIT, IIT BombayX, Shakshit India, etc.*

Below is a timeline of MOOCs in India:

Initiatives	Year Launch	ofution BehindPlatform	Website Link
NPTEL	2003	IIT Madras	nptel.ac.in/
mooKIT	2012	IIT Kanpur	www.mookit.co/
IITBX	2014	IIT Bombay	iitbombayx.in/
SWAYAM	2016	Ministry of Education (Erstwhile MHRD), Govt. of India and Microsoft	swayam.gov.in

Table 1: History of MOOCs in India

7.1.: History of MOOCs courses Rural Development and its allied areas: The International Research and Training Center for Rural Education (INRULED), UNESCO has been working in the field of rural education and aims at rural transformation thorough education, was one of first to introduce MOOC course series on “*Education and Development*” comprised of 16 course is composed of 5 models hours, which review China’s theoretical framework and effective practices in promoting societal development through education. The courses intend to provide useful reference for the wider developing world in exploring the potential pathway for sustainable rural development through education. The course series feature five sub-courses including Rural Education and Rural Development: Key Indicators and Data Analysis, Women leadership for Rural Education Development, ICT in Education for Rural Development, Skills Training for Leapfrog Rural Development, and Rural Teachers and Social Development. Another earlier course MOOC course rural development subject is Rural Service-Learning course for university teacher and community organization. The era of MOOCs was can be traced in 2012 in the USA by Prof Anant Agarwal (MIT), MOOCs have enhanced the popularity of online services as a medium in training and continuing education and at the same time increased the accessibility of digital learning 6 Policy Paper 70 or educational resources. They have leveraged unprecedented opportunities for imparting meaningful and effective training on a massive scale. The first MOOC on Mobiles for Development, offered in 2013, It was followed in 2014 with a MOOC on MOOCs, which used the new beta version of the mooKIT platform. In later years, many MOOCs on agriculture and other areas were offered by Commonwealth of Learning.

On October 1, 2019, COL and its partners, Vidiyal and Reddiarchatthiram Seed Growers Association in India, launched India’s first massive open online course (MOOC) on corporate literacy on smartphone. The content has been adapted from original materials developed by India’s

National Bank for Agriculture and Rural Development (NABARD) and COL's Lifelong Learning for Farmers Initiative. The learning materials are delivered as audio clips that can be access using a simple mobile phone. This course was aimed to build a series of measures to build capacity of these shareholders to access new finances and credit from formal channels. The popularity of online learning through MOOCs in India has grown since the advent of MOOC courses through Swayam and other platforms such as NPTEL. Once more, during the COVID-19 pandemic, enrollment increased, forcing us to switch to online instruction from traditional instruction. It served as a stimulant for MOOC enrollment, resulting in the emergence of several courses covering a wide range of topics.

8. Methodology:

This study uses a web-based survey of the websites of major MOOCs providers in India. For this study, four (4) major and most popular MOOCs platforms in India like SWAYAM, NPTEL, edX, Coursera are selected for the study. Google search engine and different academic sites like Google Scholar were employed to browse the web resources of the websites to gain basic knowledge about MOOCs. BASE academic search engine is used to collect related literature on the topic. Through the survey, a variety of MOOCs providers have been browsed to search MOOC courses in Rural Development domain. The author found a total 43 courses related to rural development domain in selected five MOOCs websites.

The details of the courses found are listed below:

SL No.	Name of the MOOC Platform	Courses found	Percentage (%)
1.	SWAYAM	10	23.25
2.	NPTEL	11	25.58
3.	edX	14	32.55
4.	Coursera	08	18.60
Total Numbers of Courses on Rural Development Found		43	100

Table 2: Details of courses found on Rural Development Domain 8.1.: Sources of Data:

The major data sources used for the study are mentioned below:

- ❖ *Primary Sources:* Publishes Literature on MOOCs (Journals, Reports etc.)
- ❖ *Secondary Sources:* MOOCs website etc., Directory and online indexes

8.2.: Data Collection Procedure: Google search engine and different academic sites like Google Scholar were employed to browse the web resources of the websites to gain basic knowledge about MOOCs. BASE academic search engine is used to collect related literature on the topic.

9. Present status of MOOCs for Rural Development in India:

a. : SWAYAM: Inspired by the concept of “Digital India”, “Study Webs of Active Learning for Young Aspiring Minds” (SWAYAM) is a joint initiative of Ministry of Human Resources Development and All India Council of Technical Education (AICTE), Government of India. It is an indigenous IT platform for delivering MOOCs in India. Its coverage is from school level to post Graduate level. It is visualized as one stop web and mobile based platform to provide to provide high quality learning facility using multimedia on anytime and everywhere basis. The system supports

easy access, monitoring, certification etc. It is a learner friendly system where user can clear doubts by group interaction through discussion forum and web conferencing. The current SWAYAM platform is developed by Ministry of Human Resources Development (MHRD) and NPTEL, IIT Madras with the help of Google Inc. and Persistent systems Ltd. SWAYAM is designed especially for school or college dropouts, working professionals, researchers and students from remote areas. The courses on SWAYAM platform in Rural Development subject are shown in the table:

SI No	Name of the Course	Instructor	Coordinating/Host Institution
1.	Remote Sensing and GIS for Rural Development	Prof. Pennan Chinnasamy	IIT Bombay
2.	Communication and Extension for Sustainable Development	Prof. Heena K. Bijli	Indira Gandhi National Open University
3.	Environment Natural resources and Sustainable Development	Dr. Abhakar Rao Jandhyala	University of Hyderabad
4.	Sociology of Development	Dr. Deepak Paliwal	Indira Gandhi National University, New Delhi
5.	Challenges to Sustainable Development	Dr. Deeksha Dave; Dr. Y.S.C. Khuman	Indira Gandhi National Open University, New Delhi
6.	Skill Development of the youths and their Livelihood	Dr. Ritimoni Bordoloi	Krishna Kanta Handiqui State Open University, Guwahati
7.	Global Strategies to Sustainable Development	Dr. Y.S.C. Khuman	Indira Gandhi National Open University, New Delhi
8.	Gandhi: Ecology and Sustainable Development	Dr. Shubhangi Vaidya	Indira Gandhi National Open University (IGNOU), New Delhi
9.	United Nations Sustainable Development Goals (UNSDGs)	Prof. Shiva Ji	IIT Hyderabad
10.	Rural Water Resources Management	Prof. Pennan Chinnasamy	IIT Bombay

Table 3: List of Institutions offering Courses through SWAYAM

b. : NPTEL

The National Programme on Technology Enhanced Learning (NPTEL) is also a project of MHRD, GOI. It started functioning from 2003 with seven Indian Institutes of Technology (IITs) and started offering open online courses under different courses from 2014 with verified certificates. It also became one of the most subscribed YouTube educational channels with 1.5 million subscribers. In 2019, SWAYAM and NPTEL were integrated together. Presently it is also known as SWAYAM-NPTEL course. In terms credit transfer, universities and colleges are approving it for academic record if the students complete the course successfully. NPTEL provides following courses for rural development:

SI No	Name of the Course	Instructor	Coordinating/Host Institution
1.	Rural and Urban Sociology	Dr. Anindita Chakrabarti	IIT Kanpur
2.	Introductory Rural Sociology: Continuity And Change,	Prof. Ashish Saxena	IIT Kanpur
3.	Strategic Communication for Sustainable Development	Prof. Aradhna Malik	IITKGP
4.	Biodiversity Protection, Farmers and Breeders Rights	Prof. Padmavati Prof. Narendran Thiruthy	IITKGP
5.	Economics of Health and Education	Prof. Rajshree Bedamatta	IITG
6.	Water, Society and Sustainability	Prof. Jenia Mukherjee	IITKGP
7.	Sociology and Resource Management	Prof. Archana Patnaik Prof. Amrita Sen	IITKGP
8.	Development Research Methods	Prof. Rajshree Bedamatta	IITG
9.	Sociology of Development	Prof. Sambit Mallick	IITG
10.	Environment and Development	Prof. Ngamjahao Kipgen	IITG
11.	Business and Sustainable Development	Prof. Trupti Mishra	IITB

Table 4: List of Institutions offering Courses through NPTEL

c. : **edX**: Harvard University and Massachusetts Institute of Technology (MIT) found a classy free online learning platform named edX in 2012 through Open edX (an open-source learning platform). It certifies all the successful learners for completing courses. Presently, edX has quite 20 million learners with 2500 plus accessible courses coordinated by 140 institutions and approximately 87 million enrollments. edX run following courses for rural development related subjects:

SI No	Name of the Course	Instructor	Coordinating/Host Institution
1.	Ruralization: Creating New Opportunities in Rural Areas	Willem Korthals Altes, Tuomas Kuhmonen, Aisling Murtagh	DelftX
2.	Rural Development with Micro-finance	NA	State Bank of India
3.	Cooperatives and Producer Companies	Prof. Trilochan Sastry	IIMB
4.	Remote Sensing and GIS for Rural Development	Prof. Pennan Chinnasamy	IIT Bombay
5.	Communication and Extension for Sustainable Development	Prof. Heena K. Bijli	Indira Gandhi National Open University
7.	Environmental Natural resources and Sustainable Development	Prabhakar Rao Jandhyala	University of Hyderabad
8.	Sociology of Development	Dr. Deepak Paliwal	Indira Gandhi National Open University, New Delhi
9.	Challenges to Sustainable Development	Dr. Deeksha Dave; Dr. Y.S.C. Khuman	Indira Gandhi National Open University, New

			Delhi
10.	Skill Development of Youths and Their Livelihood	Dr. Ritimoni Bordoloi	Krishna Kanta Handiqui State Open University, Guwahati
11.	Global Strategies to Sustainable Development	Dr. Y.S.C. Khuman	Indira Gandhi National Open University, New Delhi
12.	Gandhi: Ecology and Sustainable Development	Shubhangi Vaidya	Indira Gandhi National Open University (IGNOU), New Delhi
13.	United Nations Sustainable Development Goals (UN SDGs)	Prof. Shiva Ji	IIT Hyderabad
14.	Rural Water Resources Management	Prof. Pennan Chinnasamy	IIT Bombay

Table 5: List of Institutions offering Courses through NPTEL

d. : Coursera: Coursera was founded by two Stanford professor Daphne Koller and Andrew Ng in 2012. Learners can pursue more than 2700 active courses for specializations, professional certificates and master track certificates. It offers more than 4100 courses from various subject domain by partnering with Yale, University of Pennsylvania, Google and IBM etc. The courses offered by Coursera for rural development related domain are:

SI No	Name of the Course	Author	Institution
1.	Age of Sustainable Development	Jeffrey Sachs	Columbia University, New York
2.	The Sustainable Development Goals – A global, transdisciplinary vision for the future	Katherine Richardson	University of Copenhagen
3.	Sustainable Development -Ideas and Imaginaries	Bo Fritzboøger	University of Copenhagen
4.	Identifying Social Entrepreneurship Opportunities	Kai Hockerts	agen Business School
5.	Sustainability of Social- Ecological Systems: The Nexus between Water, Energy and Food	Mario Giampietro Andrea Saltelli Tarik Serrano	Universitat Autònoma de Barcelona (The Autonomous University of Barcelona)
6.	Strategies and Tools to Mitigate Agricultural Risk	Paul B. Stoddard	University of Illinois at Urbana-Champaign
7.	Foundations of Diversity, Equity, and Inclusion	Sam Mejias	Parsons School of Design
8.	Animal Behavior and Welfare	Professor Nat Waran	University of Edinburgh

Table 6: List of Institutions offering Courses through NPTEL

10: Discussion on Major Results: As per the finding of results, it is found that

- ❖ edX offers most numbers of courses for rural development related topics. EdX offers 14 MOOC courses (32.55%) out of total 43 courses studied.
- ❖ Another important MOOC platforms which offer rural development subject are NPTEL (25.58%) and SWAYAM (23.25%). Coursera provides least numbers of courses (18.60%) for rural development related topics.
- ❖ Most of the courses are offered on topics like sustainable development, rural sociology, environmental impact etc.
- ❖ In all the courses (100%) conducted in India surveyed in this study are offered in English language. No MOOCs for rural development are not conducted in any Indian languages. This will

a barrier for those who does not know English.

- ❖ **Copyright and Intellectual Property Rights and Licensing Issues:** Because MOOCs are used by a large number of students, there may be significant infringements of intellectual property rights and copyrights. Instructors need to know more about how to give MOOC participants from all over the world access to licensed e-resources and copyright materials. But most of MOOC courses in rural development surveyed, most of the course doesn't mention any licenses.
- ❖ **Assessment and Evaluation and Inadequate Guidelines on Credit Transfer:** In most of the cases surveyed (31.70 %), MOOC courses sites do not have proper guidelines about credit transfer like a regular course, so appropriate techniques of assessment and credit transfer must be formulated, which will helpful for learners in academic progress and certification.

10. Educational Significance of the Study: This study will be a guide or reference for courses on rural development and its allied domains and for help in studies on online learning scenarios on rural development in India.

- By leveraging online platforms, MOOCs can reach learners in remote and underserved areas, reducing the geographic and logistical barriers to education.
- Continual Skill Development: MOOCs offer opportunities for continuous learning and skill enhancement, which is essential for adapting to changing economic and social conditions in rural areas.
- The flexible nature of MOOCs allows learners to engage with educational content at their own pace and schedule, accommodating the diverse needs and constraints of rural populations.
- Education through MOOCs can empower individuals with the knowledge to implement development projects, advocate for their rights, and improve their quality of life.
- Bridging Educational Gaps: MOOCs can help bridge the educational gap between urban and rural areas, promoting equity in educational opportunities.
- Gender Inclusivity: MOOCs have the potential to reach women in rural areas who might face cultural or logistical barriers to traditional education, thus promoting gender inclusivity in education.
- MOOCs offer scalable educational solutions that can be expanded to reach large numbers of learners across diverse geographic areas.
- MOOCs often incorporate interactive elements such as quizzes, forums, and peer assessments, which can enhance engagement and learning effectiveness.
- The study can highlight successful models of inclusive education through MOOCs, which can be replicated or adapted in other regions and contexts.

These points underscore the significant potential of MOOCs to transform education and drive rural development in India, highlighting the importance of this research study in understanding and leveraging these opportunities.

11. Recommendations for Integrating MOOCs in Education for Rural Development:

Some probable suggestions for better incorporation of MOOCs in Rural Development are given below:

- a. **Orienting the Learner:** Getting the students started on the right foot is a great way to support MOOCs. This will support students' participation in the teaching and learning process as well as their appropriate use of the platform, which will ultimately improve their academic success.
- b. **Development of Blended Pedagogy for MOOCs:** It is crucial to support the practice and development of online and blended pedagogy to enhance learning quality and scalability, as well

as to offer online degrees for MOOCs, in order to popularize MOOCs in India's rural development.

- c. **Promotion of digital literacy:** Proficiency with digital technology and the digital environment is a prerequisite for making better use of the MOOCs platform. The first step in boosting digital literacy would be to start teaching it at the entry level in schools and universities. Teachers are the main actors in the process. As of right now, introducing MOOCs from the most basic level of education to higher studies requires teachers to be technologically savvy.
- d. **Infrastructure development:** This would be considered the main priority because MOOCs call for the implementation of a large-scale digital infrastructure. To administer online exams, centers for online testing must be established. However, a small portion of the population personally owns the necessary digital infrastructure (such as PCs, webcams, high-speed internet, etc.), which presents a barrier.
- e. **Promotion of Open Access Policy MOOCs:** In order to develop MOOCs, open-access software and policies should be implemented. This will aid in both the creation of new MOOC courses and the accessibility of those courses to a larger audience.
- f. **Enhancement of MOOCs' academic standing and recognition:** To raise MOOCs' academic standing and recognition, specific actions must be taken. This would entail certification requirements that are comparable to those in regular education, assessments that are equally rigorous, and appropriate project promotion for MOOCs.
- g. **Introducing MOOCs in regional languages:** Roughly 100 million people in India are estimated to speak English. Even though English-speaking people make up the second-largest population in India, just 9% of the country's total population speaks the language. Furthermore, a sizable percentage of them are seriously lacking in fluency. However, English is the primary language of instruction in the majority of MOOCs. Therefore, creating digital content for MOOCs in regional Indian languages is crucial to making them more palatable for learners who do not speak English. This will also subtly contribute to the preservation of the country's linguistic and regional history.
- h. **Rethinking the present syllabus and Course Curriculum:** In order to keep the MOOCs relevant for learners, it is crucial to periodically review and update the present syllabus. If the syllabus is thorough, detailed, and tailored to the needs of the sector, it will make things easier for the students.
- i. **Content Organization:** Sorting the materials according to the order in which they should be taken would be a huge time-saver. For instance, a subject's chapter can be broken into subtopics and arranged in Google Drive folders accessible via a shared link. Teachers and students may now access the resources more easily and quickly.
- j. **Uses of Audio-Visual Teaching Aids:** To make instruction more understandable, additional features like interactive media and audio-visual aids can be added to PowerPoint presentations. Test series can also be included at the conclusion of each chapter. The learners should find the presentation visually appealing.
- k. **Reevaluating the methods of grading:** Critical thinking abilities and classroom engagement can be used to determine a student's grade. In order to improve the learning experience for both students and teachers, feedback can also be incorporated.
- l. **Promotion of MOOCs:** It is crucial for the popularization of MOOCs to support the global marketing and outreach of Indian universities and other institutions.

12. : Limitation of the Study: The study has following limitations-

- a) The study is limited to discussion of MOOCs in rural development and related domains in India.
- b) The literature, published in English language related to the topics of study only are included in the

study.

- c) The study may lack a comparative analysis with traditional education methods, making it difficult to assess the relative effectiveness of MOOCs.
- d) Socio-economic factors such as poverty, gender disparities, and work commitments can limit the time and resources rural learners can dedicate to MOOCs.
- e) Short-term studies may not capture the long-term impact of MOOCs on rural development and educational outcomes.

13. : Conclusion: India needs efficient and effective ways to educate its students because it has the largest population in the world and one of the highest enrollment rates in higher education. Beyond the formalities of higher education systems, MOOCs have the amazing ability to increase access to free online courses for a huge number of participants worldwide. It offers special features that help people who are employed full-time or have stopped their formal education advance towards a goal of lifelong and on-demand learning. The New Education Policy : (NEP2020) in this regard will have an important tool to popularization of MOOCs. According to this scenario, MOOCs will be very essential in the future in terms of user base and institutional collaboration in India.

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