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An Investigation into Research Trends of Massive Open Online Courses (MOOCs)

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Abstract *The genesis of Massive Open Online Courses (MOOCs) is traced back to the early 2000. Since then, it has been a roller coaster ride till 2008 and afterwards they have been attracting great deal of interest and attention from the researchers and academicians all over the world. The research interest focusses upon numerous subjects from growth and development of MOOCs, MOOCs design, strategies, MOOCs model, MOOCs challenges, improvements and impact etc. to perspectives of MOOCs providers, stakeholders and institutions. Present study investigates into the historical development of online teaching and learning into education, growth and development of MOOCs in higher education and trends in research on MOOCs by reviewing research papers on MOOCs in Emerald. The study analyzes research papers (N = 30) related to MOOCs in academic database given in Emerald. A systematic review approach is undertaken for the purpose of the study. First, a database is created of all the research papers and then the content analysis is done to develop an insight into trends on numerous themes of research. The findings of the present study indicate that the research in MOOCs has been focused on MOOCs platform providers at the initial stages to MOOCs pedagogy in the contexts of MOOCs provider institutions and participants as teachers and students. The study paves the path for future research in MOOCs.*

Keywords: *Massive Open Online Courses, MOOCS, Research Trends*

INTRODUCTION

"A MOOC is an online course with the option of free and open registration, a publicly shared curriculum, and open-ended outcomes. MOOCs integrate social networking, accessible online resources, and are facilitated by leading practitioners in the field of study. Most significantly, MOOCs build on the engagement of learners who self-organized their participation according to learning goals, prior knowledge and skills, and common interests. The term came into being in 2008, though versions of very large open online courses were in existence before that time" (McAuley, Stewart & Cormier, 2010). The Massive Open Online Courses (MOOCs) are the newly launched e-learning resources that are technology-based and are very much in use as a learning mode through distance education. The term MOOCs was coined by Dave Cormier and Bryan Alexander in the year 2008 for describing an online course model that was originally developed by their fellow academicians George Siemens and Stephan Downes (Barnaby, 2013). The basis of the course was connectivist principle where a web of connections bring out knowledge and learning to the students. It was the first MOOC course in which twenty-five students paid and enrolled at the University of Manitoba and 2300 students enrolled freely via online. The mode of interactive learning was blogs, discussion forums and online meetings (Wikipedia, 2013a). The greatest advantage of MOOCs is learners can get enrolled from anywhere across the globe and fulfil their educational needs through the e-content developed by the subject experts, educationalists and mentors. MOOCs offer a plethora of online, free of cost and technology-based courses where learners get the opportunity to learn at their pace collaborating with peers and experts from around the world. The teaching pedagogy of MOOCs primarily focuses upon interactive teaching-learning using tools like videos, audios, blogs, forums and podcasts to stimulate students' maximum engagement. The Commonwealth of Learning describes MOOCs as a means to expedite the effective

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creation, distribution and use of knowledge and information for learning through freely available online resources such as OER, and that they can be used to aid social networking and other forms of "connectivity" among the participants (Gupta, 2019a; Gupta, 2019b). Therefore, primarily MOOCs is about the active engagement of large numbers of self-organizing learners and the connections they build amongst them using the course platform and other available social interaction tools.

It was also found out that there is prolific development in the pedagogy and platforms of MOOCs attracting large student cohorts. In 2011, huge response is received from the public as three MOOCs were launched (UUK, 2013) as 160,000 students enrolled to only one course titled "Introduction to Artificial Intelligence" developed by Sebastian Thrun and Peter Norvig's (Yuan & Powell, 2013). This shows the revolutionary upsurge in the interest towards MOOCs from modest beginning of Downes and Siemens early MOOCs. The rise in number points towards difference in teaching pedagogy of MOOCs and conventional model of delivering at the campus or through distance mode. Two unique features of MOOCs as identified by Wikipedia (2013a) are open accessibility and scalability to encompass an indefinite number of learners.

For the present research study, the Emerald Publishing – part of Emerald Group, was selected. Emerald Publishing was founded in the year 1967 weaving new ideas to fabricate the advancement of research in the fields of education, management and business etc. It has an impressive portfolio of nearly three hundred journals, more than twenty-five hundred books and over fifteen hundred teaching cases (http://www.emeraldgrouppublishing.com/about/index.htm during March-April, 2019). Also, it is an active member of Globally Responsible Leadership Initiative (GRLI), and has received plethora of awards and research grants owing to its contribution into research and education worldwide. Emerald has been collaborated with numerous academic and corporate organizations and associations worldwide like the Association to Advance Collegiate Schools of Business (AACSB), the Academy of Management, the International Federation of Library Associations (IFLA), the American Library Association (ALA), the European Foundation for Management Development (EFMD), CEEMAN (Central and East European Management Development Association), amongst others. Since, the present study aims at generating enlightenment about the evolution of online teaching, e-learning and MOOCs, mapping the growth and development of MOOCs and investigating into research trends in MOOCs; it is apt to choose a publishing group of global repute that offers a platform to global researchers to share their research interest. That is why Emerald Publishing has been selected for the present study.

OBJECTIVES

The study focuses on the following objectives:

- To review the previous research studies and secondary literature to know about evolution, growth & development of online teaching, e-learning and Massive Open Online Courses (MOOCs).
- To study the trends of research interest towards MOOCs over the years and to identify the key areas and categorize the sub-themes of the MOOCs research that draw the attention of the researchers most frequently throughout the years.
- Based on the above information, to develop an understanding about some emerging trends and make suggestions on future research directions in the field of MOOCs.

METHODOLOGY

The present research study is divided into four phases. In the premier phase, secondary literature was studied to track the evolution and development of online teaching, learning programs and Massive Open Online Courses. In the second phase, an overview of the overall development of research in the field of MOOCs in various journals of Emerald Publishing is done. In the third phase, the thorough content analysis of the articles published until the period of the study (April, 2019) has been undertaken to understand the research interests of various researchers worldwide. In the last phase, the emerging trends in the frequently used subject areas in MOOCs research studies have been highlighted.

OBJECTIVE – WISE FINDINGS AND DISCUSSIONS

Objective 1

To review the previous research studies and secondary literature to know about evolution, growth & development of online teaching, e-learning and Massive Open Online Courses (MOOCs).

The previous research papers, articles, reports and other secondary resources were studied to track down the timeline of various online teaching and learning programs and growth of Massive Open Online Courses. The genesis of the World Wide Web was tracked back to the year 1992 and since then, there was an abundance of a wide variety of freely available Open Information Resources (Duggal & Dahiya, 2017; Dahiya & Duggal, 2015). But, most of the materials were bereft of promotion or incorporation of

enhanced learning and recent technological & pedagogical advancements in education. Moreover, there was also overloaded informational content without any assurance of content quality (Gupta, 2019c). Initially, the focus was just limited to providing basic facilities like computers and the internet in educational set-ups.

The last three decades of twentieth-century witnessed the efflorescence of teaching pedagogies infusing Information and Communication Technologies (ICTs). The period from the late 1960s to early 1980s, Computer Assisted Instruction (CAI) displayed "drill and practice" computer programs. The pedagogical models of twentieth-century used Behaviorist models, Cognitivist theories and Constructivist Theories enhanced by the inclusion of ICT. Twenty-first century witnessed the assimilation of digital technologies into learning, internetization of society, and generation Z learners. The high-tech environment, laptops, android phones, artificial intelligence and smart ecosystems greatly influence today's generation. Connectivismis the buzz word for the pedagogical models of twenty-first century. Sensing the need of creating an ecosystem of web-based learning and teaching, George Siemens founded Connectivism as a learning theory for the digital era (Siemens, 2005). The lacunae of twentieth-century pedagogical models are duly taken care of as connectivism theory broadens the learners' role from understanding of knowledge to its application in real life set-ups (Anderson & Dron, 2011). The focus is shifted from gaining knowledge to attaining knowledge and skills to further formation of competencies.

Connectivist MOOCs (cMOOCs) is one such offshoot of Connectivism theories. It was early 2000s when there was breakthrough of Massive Open Online Courses (MOOCs) (Richter & Naidu, 2016). But it gained the momentum in the year 2008 with connectivist MOOC (cMOOCs) came into existence, deciphering it as connectivist learning on networks (Hollands & Tirthali, 2014). In this, the participants navigate through their own set of web connections and understand themselves. So, here the focus is upon networking, connecting the learners rather than presenting the content to them. There is no pre-fixed set of skills or competencies. Exhibit 1 enlists the prominent c-MOOCs that have taken place.

Exhibit 1: Connectivist MOOCs Offered Since the 1st MOOC in 2008 (from mooc.ca as exhibited by Levy, 2014)

Year	Course Title
2008	● Connectivism (Fall 2008) - the first MOOC
2009	● Connectivism (Fall 2009) ● Connect! Your PLN Lab (Fall 2009)
2010	● PLENK - Personal Learning Environments Networks and Knowledge (Fall 2010)
2011	● Change11 MOOC - Change: Education, Learning, and Technology! (Fall 2011) ● eduMOOC - Online Learning Today and Tomorrow (Summer 2011) ● DS106 - Digital Storytelling (Summer 2011) ● MobiMOOC - Mobile Learning (Spring 2011) ● LAK11 - Learning and Knowledge Analytics (Spring 2011) ● CCK11 - Connectivism and Connective Knowledge (Spring 2011)
2012	● Mobi-MOOC ● Games Based Learning MOOC ● MOOC MOOC: a mini-MOOC, a meta-MOOC, a MOOC about MOOCs

The pedagogical model of the connectivist MOOCs considers knowledge as a web of networks that are created through learning using online and social tools. The model is said to be revolutionary since it annihilates the invisible walls standing tall between the academic institutions and the outside world. It invites all aspired to learn without consideration of distance or stance.

MOOCs make use of saved video tutorials and assignments for teaching online. Traditional learning formats like lectures, instructions, discussions etc. are offered online using software platforms owned by private enterprises. There are so many derivatives too like Short, Private Online Courses (SPOCs), Vocational Open Online Courses (VOOCs), Selective Open Online Courses (SOOCs) and other mobile MOOCs too. In spite of being quite different from original characteristics of original MOOCs, these variations also point out that there is a renaissance in the interest towards e-learning. It fabricates the contract bond between the content creator i.e. academic institution and the content presenter laced with technology i.e. enterprise. Then came the category of Open Educational Resources – plethora of web-based tutorials constituting quasi-MOOCs sans socialization imperativeness of cMOOCs and automated grading of xMOOCs.

The efflorescence in the MOOCs is also due to the increasing number of online platforms that started showing their interest. The well-known technology platform providers are Coursera, edX, Udacity and future learn. Coursera was founded by Daphne Koller and Andrew Ng. in 2012 to disseminate knowledge and skills at a global platform. Coursera, owned by Andrew Ng and Daphne Koller, is an educational enterprise boasting partnership with 160 of the top world-class universities and industries offering the courses with certification, degrees and specializations to the learners around the world. It is not exaggerated that it is one of the largest MOOCs platforms with 31 million registered enrollments in 2600 courses and 236 specializations. Mastery Learning, Active Learning, Peer Assessment, Grading Techniques, Proctored exams via webcam are some of the key features of the courses offered at Coursera (adopted from https://www.coursera.org/ on 20-6-2019). edX was founded in 2012 by Harvard and MIT and is renowned and trusted platform for providing education and learning with more than forty million learners in twenty thousand courses. Active learning, constructive learning and self-regulated learning through texts, videos, questions etc. are major pedagogic foundations (extracted from https://www.edx.org/ as on 20-6-2019). In 2011, Udacity was established by Sebastian Thrun that offers numerous courses with a mission to democratize education with more than 80000 enrollments and 100 plus enterprise customers globally. It concentrates on interactive, project-based, and video learning etc. to facilitate teaching-learning process. (extracted from https://www.udacity.com/ as on 26-6-2019). Future learn launched its first course in 2013 and since then there is no looking back. Today, it boasts of having millions of people joined at various courses, having partnerships with many of best universities of UK and others of international repute. Story Telling, Discussion, Visible Learning through "to do List" and discussions etc. are the of the course delivery processes at Futurelearn (extracted from https://www.futurelearn.com/ as on 26-6-2019).

The list of platforms offering MOOCs is swelling every day. The previous research studies have also underlined some common features among various MOOCs that are otherwise unique in their own ways. The openness, accessibility, increasing popularity, content enriched with audio & video aids, peer assessment, assignments and discussion forums are common characteristics put up in nutshell by Glance et al. (2012). If the timeline of the development of MOOCs is tracked down, it is discernible that the year 2012 was regarded as "Year of MOOC" (Pappano, 2012) because the number of enrollments in numerous MOOC programs received momentum owing to various universities and institutions gearing towards launching and offering abundance of MOOCs at various platforms. It is further confirmed by the fact that Coursera alone had a remarkable five million counts of enrolled students in five hundred courses offered from 107 reputed universities (Protalinski, 2013). These new MOOC programs are different in their pedagogy by shifting their focus from learning through the web of networks of earlier ones to instructivist approach with learning via video instructions and automatic assessment (Chand, Dahiya & Duggal, 2015; Dahiya & Duggal, 2014).

Though there is a proliferation in MOOCs, it is discernible too that the completion rate of these courses is quite low. Many research studies have also been conducted in this area so as to reduce drop-out rates. Jordon (2014) has concluded that the length of the course is an important factor influencing the drop-out rate in his study. He also found out that the courses having short duration have high completion rates.

Numerous research studies have shown various concerns on MOOCs ranging from its origin, growth, development, pedagogy and completion statuses etc. The present paper is an attempt to review the research publications published in Emerald Publishing Group so as to track the research developments in the areas of MOOCs and to explore the future of research in MOOCs too.

Objective 2

To study the trends of research interest towards MOOCs over the years and to identify the key areas and categorize the sub-themes of the MOOCs research that draw the attention of the researchers most frequently throughout the years.

For the present study, keywords like MOOC, MOOCs and MOOCs in Higher Education were used into Emerald search box during the months of February-March-April 2019. When keyword MOOC was fed, a total of 224 research studies were found. On feeding the keyword MOOCs in search box, 342 research studies were found. And 296 studies were found out when the keyword was MOOCs in Higher Education. The research studies were written in different genres as Research Paper, General Review, View Point, Chapter Item, Conceptual Paper, Non-Article and Secondary Article on MOOCs, online education, Open University System and e-learning etc. Exhibit 2 shows the category-wise number of academic writings on MOOCs and allied areas of e-learning and open education etc. since 2013 in Emerald Publishing.

Exhibit 2: Category-Wise Number of Academic Writings on MOOCs and Allied Areas Over the Years in Emerald Publishing

Sr. No.	Year	General Review	View Point	Non-Article	Conceptual Paper	Research Paper	Chapter Item	Secondary Article	Case Study	Miscell-aneous	Total
1	2013	0	2	2	4	6	13	8	1		36
2	2014	0	0	8	0	8	6	0	4		26
3	2015	7	7	4	2	12	10	0	3		45
4	2016	4	3	4	4	15	18	0	7		55
5	2017	2	7	3	4	22	7	0	6		51
6	2018	1	2	2	3	25	25	0	5		63
7	2019 till April	2	1	2	0	9	6	0	0		20
Total		16	22	25	17	107	84	8	26	37	

The exhibit above has very clearly indicated that there is consistent growth in the research interest shown by various researchers over the years. Though there are 107 research papers written till April, but only 30 research papers are found to be MOOCs specific. For the present study, only those research papers were analyzed. Exhibit no. 3 shows the trends of the research interest towards MOOCs from 2013 till present.

Exhibit 3: Trends of Research Interest Towards MOOCs Over the Years in Emerald Publishing

Sr. No.	Year	Number of Research Papers Specifically on MOOCs
1.	2013	1
2.	2014	1
3.	2015	1
4.	2016	4
5.	2017	10
6.	2018	10
7.	2019 till April	3

Source: https://www.emeraldinsight.com/action/doSearch?AllField=MOOCs&content=articlesChapters (Last browsed on 15 April, 2019)

It was found out that though the research paper on MOOCs was one per year (2013-2015) but the interest was taking grounds since during these three years, many viewpoints, conceptual papers, Chapter Items, Secondary Articles and general reviews were written by various authors, academicians, scholars and researchers all over the world (Exhibit no. 1). From this, it is clearly discernible that MOOCs was the emerging area of interest amongst academicians over the globe with more focus on developing an understanding of MOOCs. In 2016, four research papers were written on MOOCs along with plenty of viewpoints, chapter items, conceptual papers, secondary articles and general review. Year 2017 onwards, the interest in MOOCs increases with plethora of various genres of academic writings including research papers.

Objective 3

Based on the above information, to develop an understanding about some emerging trends and make suggestions on future research directions in the field of MOOCs.

The thorough content analysis of the research papers projected numerous reflections on the trends in the research areas interests of the researchers since 2013 that are detailed as under:

The researchers at the initial phases concentrated more upon describing about the birth, growth and development of various MOOCs Platform Providers and how they kept on improving their technology aiming towards reaching to masses.

It was also discernible that the research papers from 2013 to 2016 concentrated more upon MOOCs Provider Institutions and their collaboration with various MOOCs Provider Platforms.

- A consistent topic of research interest has been the detail description of origin, growth and development of Massive Open Online Courses in all the years.
- The researchers were also interested in exploring the effectiveness of the MOOCs as well as gave many suggestions based on their research studies to improve their effectiveness.

- Learner centricity is one such key area that has attracted the attention of the researchers most of the times but the intensity increases from 2017 onwards.
- The last two years have witnessed the increasing interest of the researchers towards analyzing MOOCs pedagogy from various perspectives to measure MOOCs effectiveness.
- The research studies also focused upon evaluating learners' motivation to complete MOOCs they are enrolled in so as to measure the success rate of MOOC programs.
- Some research studies were also conducted from the teachers' perspectives analyzing their motivations to participate in the various MOOCs.

Exhibit 4: Shows the Content Analysis of the Research Papers in Emerald Publishing Group on MOOCs from 2013 to April 2019

Sr. No.	Title of the Paper	Year of Publication	Author(s)	Key Area	Sub-Themes
1.	The advance of the MOOCs (massive open online courses): The impending globalization of business education?	2013	Thomas Clarke	● MOOC ● MOOC Provider Platforms ● MOOC Course Provider Institutions	1. Analyzing the origins, structure and orientation of Massive Open Online Courses (MOOCs) and tracking their future trajectory comparing their development with earlier waves of e-learning 2. Studying the scale and scalability of educational and business models of major MOOCs providing platforms Coursera, edX, Futurelearn and Udacity 3. Exploring the responses of the universities in the process of adoption of MOOCs
2.	Measuring the success of scaleable open online courses	2014	Jane E. Klobas	● MOOCs ● Open Online Courses ● MOOC Provider Institutions ● MOOC Participants – Learners & Teachers	1. Explanation of brief history of MOOCs. 2. Establishing key features of Open Online Courses. 3. Measuring success of online open course for non-commercial institutional providers of massive open online courses (MOOCs) and other scalable open online courses (SOOCs) by examining the features of open online courses, existing knowledge about their providers and users and their motivations, and current practice in MOOC evaluation and data analytics.
3.	Pedagogic Orientations of MOOC Platforms: Influence on Course Delivery	2015	Billy Tak Ming Wong	● MOOCs Provider Platforms – Coursera, edX, FutureLearn& OpenLearning	1. Comparative analysis of the influence of Pedagogic orientation of MOOC platforms on course delivery on given parameters ● Duration of the course ● Learning Activities, Assessment ● Social Interaction ● Instructor Participation
4.	The use of MOOCs in transnational higher education for accreditation of prior learning, program delivery, and professional development	2016	Carrie Amani Annabi, Stephen Wilkins	● MOOCs Course Providers ● MOOCs participants as Lecturers ● MOOCs users as Students/ Learners	1. Investigation of MOOCs as an instrument of: ● Accreditation of students' prior learning. ● In programme delivery at international branch campus. ● For lecturers' professional development (PD) in transnational higher education.
5.	Open courses and MOOCs as professional development – is the openness a hindrance?	2016	Ulf Olsson	● MOOCs ● Managers and HR Specialists	1. Analysis of suitability of MOOCs as a tool for Professional Development
6.	MOOCs – an opportunity for international collaboration in LIS education: A developing country's perspective	2016	Shamprasad M. Pujar , Prahalad G. Tadasad	● MOOCs ● Library Information Science ● Library Information Science Professionals	1) Concept of MOOC 2) Present role of MOOC in LIS in India 3) Exploration of Opportunities offered by MOOCs to Library Information Science Schools to overcome constraints as lack of teachers, variable skills levels, paucity of funds and limited infrastructure etc.

Sr. No.	Title of the Paper	Year of Publication	Author(s)	Key Area	Sub-Themes
7.	Factors leading to effective teaching of MOOCs	2016	Billy Tak-ming Wong	● Effectiveness of MOOCs	1. Survey of the factors that facilitated effective teaching through massive open online courses (MOOCs) by examining the review of literature on following factors : ● Characteristics of teaching in MOOCs, The profile of participants, ● The instructional design of course materials. ● The course assessment methods.
8.	On predicting academic performance with process mining in learning analytics	2017	RahilaUmer, TeoSusnjak, Anuradha-Mathrani, SuriadiSuriadi	● MOOCs ● Machine Learning Techniques ● MOOCs users as students	1) Improving students' learning experiences in MOOCs by proposing a process mining approach 2) Investigating the impact of various machine learning techniques in combination with process mining features to measure their effectiveness. 3) Student's data (e.g. assessment grades, demographic information) and weekly interaction data based on event logs (e.g. video lecture interaction, solution submission time, time spent weekly) have been taken into consideration.
9.	Application of keyword extraction on MOOC resources	2017	Zhuoxuan Jiang , Chunyan Miao , Xiaoming Li	● MOOCs	Conduct keyword extraction on MOOC resources.
10.	An improved algorithm for personalized recommendation on MOOCs	2017	Yuqin Wang, Bing Liang, Wen Ji, Shiwei-Wang, Yiqiang Chen	● MOOCs ● MOOCs Users	Proposing a multi-attribute weight algorithm based on collaborative filtering (CF) to select a recommendation set of courses for target MOOC users to alleviate the problem faced with massive courses, learners as they often waste much time finding courses they like.
11.	Gauging the value of MOOCs: An examination of American employers' perceptions toward higher education change	2017	Joseph A. Rosendale	● MOOCs ● Hiring Managers	Examined the attitude and perception of Hiring Managers towards MOOCs over traditional degree programs while making hiring and employment decisions.
12.	Different strokes for different folks: scaling a blended model of teacher professional learning	2017	Deirdre Butler, Margaret Leahy, Michael Hallissy, Mark Brown	● MOOCs ● MOOCs participants as teachers	Description of innovative model of MOOCs as an instrument of teacher professional learning.
13.	Tutors and gatekeepers in sustainability MOOCS	2017	Danish Mishra, Steve Cayzer, Tracey Madden	● MOOCs participant as teachers and Learners	Exploring the tutors' role and nature of interaction amogst learners in MOOCs.
14.	Harnessing information and communication technologies for effective knowledge creation: Shaping the future of education	2017	Vikas Gupta, Namita Jain	● MOOCs	Description of development and growth of MOOCs and future of education.
15.	The potential and challenges of MOOCs in Pakistan: a perspective of students and faculty	2017	Syed SaadAhmed, Essa Khan, Muhammad Faisal, Sara Khan	● MOOCs	Description of MOOCs' characteristics, development, potential and challenges.
16.	A comparison of MOOC development and delivery approaches	2017	Neil Smith, Helen Caldwell, Mike Richards, AroshaBandara	● MOOCs	Comparison of MOOCs on the basis of their mode of delivery and ways of development by the providers.

Sr. No.	Title of the Paper	Year of Publication	Author(s)	Key Area	Sub-Themes
17.	A case study on narrative structures in instructional MOOC designs	2017	Elke Höfler, Claudia Zimmermann, Martin Ebner	● MOOCs ● MOOC' participants as learners	Proposing a new instructional design for MOOC with improved features to increase participant activities and course completion rates.
18.	Modelling the notions and dimensions of MOOCs	2018	Maximus Gorky Sembiring	● MOOCs	Exploring the notions and dimensions of quality massive open online courses (QMOOCs).
19.	How to measure student engagement in the context of blended-MOOC	2018	FadiyahAlmutairi, Su White	● MOOCs ● MOOC' participants as learners	Measuring Student engagement in Blended MOOC by developing a model.
20.	Effectiveness of e-learning portal from students' perspective: A structural equation model (SEM) approach	2018	Gaurav Chopra , Pankaj Madan , PiyushJaisingh , PreetiBhaskar	● MOOCs ● MOOCs' participants as learners	Evaluating the effectiveness of the e-learning experience from students' perceptive.
21.	Comparing the determinants of non-MOOC and MOOC continuance intention in Taiwan: Effects of interactivity and openness	2018	Chia-Chen Chen, Chun-Hsiung Lee, Kuo-Lun Hsiao	● MOOCs ● MOOCs participants as learners	Proposing a new research model to explore intention to continue to use MOOCs from the perspectives of openness and interactivity, based on related theories and dimensions from previous research.
22.	Augmented reality-based approach for interactivity in MOOCs	2018	Hamada El Kabtane , Mohamed El Adnani , Mohamed Sadgal , Youssef Mourdi	● MOOCs ● MOOCs pedagogy	Proposing the integration of virtual manipulations (simulations and practical activities) relying on augmented reality to make MOOC teaching and learning more interesting so as to decrease drop out rate amongst students.
23.	MOOCs: a differentiation by pedagogy, content and assessment	2018	Misrah-Hamisah Mohamed, Michael Hammond	● MOOCs ● MOOCs pedagogy	Describing the organisational features like pedagogical assumptions, content materials and assessment and their differences of exemplar MOOCs.
24.	Participating by activity or by week in MOOCs	2018	AlokBaikadi , Carrie DemmansEpp , Christian D. Schunn	● MOOCs ● MOOCs pedagogy ● MOOCs' participants as learners	Providing a new characterization of the extent to which learners complete learning activities in massive open online courses (MOOCs).
25.	Examining the impact mechanism of social psychological motivations on individuals' continuance intention of MOOCs: The moderating effect of gender	2018	Zhen Shao	● MOOCs ● MOOCs' participants' motivations	Developing a theoretical model to examine the influence of psychological motivations, social influence and institutional influence on individuals' continuance intention of MOOCs and the behavioral differences between males and females.
26.	Content and instructional design of MOOCs on information literacy: A comprehensive analysis of 11 xMOOCs	2018	Stefan Dreisiebner	● MOOCs ● MOOCs' pedagogy	Understanding information literacy (IL) instruction through massive open online courses (MOOCs) and comparing the content and instructional design of existing offers and showing avenues for future MOOCs.
27.	Employee learning and development in virtual HRD: focusing on MOOCs in the workplace	2018	Sunyoung Park, ShinheeJeong, BoreumJu	● MOOCs ● MOOCs participants as learners	Exploring the potential of using massive open online courses (MOOCs) for employee learning and development.

Sr. No	Title of the Paper	Year of Publication	Author(s)	Key Area	Sub-Themes
28.	Roles and responsibilities in integrated care for dementia	2019	David Robertshaw, AinsleaCros	• MOOCs • MOOCs' participants as learners	Characterising roles and responsibilities in relation to integrated healthcare from the perspective of massive open online course (MOOC) participants.
29.	MOOCS for teacher professional development: exploring teachers' perceptions and achievements	2019	Nikolaos Koukis , AthanassiosJimoyiannis	• MOOCs • MOOCs pedagogy • MOOCs' participants as teachers	Examining teachers' views and perceptions about MOOC design features, their personal achievements and the overall outcomes for their professional work and development.
30.	Estimating student ability and problem difficulty using item response theory (IRT) and TrueSkill	2019	YoungjinLee	• MOOCs • MOOCs' participants as learners • Problem solving abilities of students	The purpose of this paper is to investigate an efficient means of estimating the ability of students solving problems in the computer-based learning environment MOOCs.

DISCUSSIONS AND CONCLUSION

There is no exaggeration that massive open online courses is the future of education. Their openness and ability to reach masses are the prominent features that have brought huge attention of plethora of educational institutions. There are different MOOCs that are offered owing to the difference in their pedagogy. The research trends if observed very closely show increasing interest in learner centricity in MOOCs. At the initial phase, various MOOCs Provider Platforms – Coursera, edX, FutureLearn, Udacity & Open Learning etc. were the areas of research interest where researchers described these platforms, their growth and development compared these platforms on various dimensions. It further moved towards exploring the interest of various educational institutions and universities in MOOCs and their motivations behind MOOCs offerings. The time came when MOOCs attracted a huge number of interested learners who enrolled to the courses offered by different educational institutions and platforms but it was also seen that as compared to the number of enrollment, the number of drop-outs was more. The less number of completion rate has drawn the attention of the researchers all around the globe that has led to numerous studies evaluating the effectivity of MOOCs, identifying learners' motivations. It has further elevated the interest of the researchers towards making these courses more learner-centric. Various suggestions to improve the pedagogy, content, instructional design and assessment methods given by the researchers in their studies. The teachers' motivations are also studied in various studies so as to improve entire teaching-learning experience through massive open online courses. The direction of future research in MOOCs is quite challenging. The researchers must ponder into strengthening the MOOC offerings by seriously working upon the reasons that lead to a decrease in aspiration to complete the courses after the enrollment. The issues and the challenges that are faced by the institutions, teachers as participants and learners must be seriously worked upon else the main aim of introducing MOOCs would fade as a bubble in no time. Together the researchers, academicians, educational institutions and MOOCs provider platforms work in a synchronized way to make it a huge success.

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