Comparison of MOOC Platforms in India

*Balam Singh Dafauti
Research Scholar, Computer Science
Uttarakhand Open University, Haldwani, India, E-mail id**:** bdafouti@uou**.**ac**.**in, balamdafouti@gmail**.**com

G Mythili
Additional Director
Staff Training and Research Institute, IGNOU, India, E-mail id**:** gmythili@ignou**.**ac**.**in

*Corresponding author E**-**mail**:** bdafouti@uou**.**ac**.**in, balamdafouti@gmail**.**com

Abstract: *Massive open online courses (MOOCs) are the most current and significant innovation in higher education. MOOCs (massive open online courses) are increasingly popular, with huge enrolment numbers. The MOOC projects launched by India include NPTEL, ePG Pathshala, NROER, IITBombayX, and SWAYAM. There are several online platforms that provide access to online courses in order to encourage continuous education. The present study examines the potential of Massive Open Online Courses (MOOCs) in the educational environment. It is difficult to adopt MOOCs in India for various reasons. Due to the advent of SWAYAM, some of these problems have already been solved. In this paper, we will describe MOOCs, as well as the institutions and universities that offer them, and provide a basic comparison between the multiple MOOC platforms. This study conducted an observational assessment of four MOOC sites in India and identified important factor for comparison. Each of the twelve identified parameters represents the usefulness of the MOOC platforms. The final result is to determine the most effective MOOC platform in Indian Context.*

Keywords: MOOC, SWAYAM, NPTEL, Higher Education, IITBombayX

1. Introduction

In higher education, Massive Open Online Courses (MOOCs) are quite new and one of the most obvious trends. The phenomenon consists of learners getting access to online educational multimedia materials, as well as interacting with other learners through social engagement tools such as discussion forums (Liyanagunawardena & Williams, 2013). Across this platform, MOOCs serve as a form of online structured education, with glossaries, images, videos, and public repositories serving as pedagogical tools (Glance, Forsey, & Riley, 2013). There were hundreds of MOOC courses available and millions of users registered from around the world. The origins of MOOCs however can be traced as the early 2000's (Zawacki-Richter, Olaf, Naidu, & Som, 2016), with 2008 being cited as the foundation year for networked learning and MOOCs. In 2008, Stephen Downes and George Siemens introduced the term MOOC and defined it as "connective learning on networks" (Baturay, 2015). Stanford University professors produced educational videos in 2011 and released them through open online platforms. MOOCs were popular in 2011 When Peter Norvig and Sebastian Thurn facilitated the Artificial Intelligence MOOC in 2011, it reached 160,000 learners from 190 countries. Stanford University developed Coursera, a for-profit platform, in early 2012 as well as Udacity, which was a free initiative. MIT developed the MITx web resource, which was later incorporated into EdX (Baturay, 2015). In recent years, MOOCs have been accepted by many countries including India, even though they originated from American universities. A review of the current state of MOOCs in India has been carried out in the current paper. MOOC platforms have been compared according to characteristics suggested by (Conache, Dima, & Mutu, 2016).

This comparison shall be useful for the organization who are planning for host the MOOCs on LMS by helping them to identify the useful features that are available in various MOOC platform, so that they can plan and integrate them in their LMS.

2. Literature Review

There are three main themes that emerge from a detailed review of the international MOOC literature presented in this section, and the authors attempt to introduce these three main themes. In accordance with this study, investigation of the regional circumstances of Indian and European nations, MOOC challenges, and the MOOC requirements in the Indian context could possibly be of assistance in improving existing MOOC knowledge and provide new insights into these topics. An extensive review of MOOCs literature, as well as Indian-centric MOOC literature, was carried out in order to find existing research papers, articles, online analysis, and other resources, which have been used in the research.

Table 1: Literature Review of comparison of Education and Educational challenges of MOOC

S. No.	Source	Findings
1	(Das, Das, & Das, 2015)	**"Present Status of Massive Open Online Course (MOOC) initiatives for Open Education Systems in India – An Analytical Study" 2015** According to the authors, the MOOC directory was reviewed to determine the growth rate, country, subject-wise distribution, and total courses available within various MOOC platforms in Indian education systems. Furthermore, this study examines the various problems and challenges regarding e-contents and educational materials.
2	(Wang & Baker, 2015)	**"Content or platform: why do students complete MOOCs?" (2015)** This study contributed to the understanding of the relationship between MOOC completion rates and learner motivation. Researchers extended their knowledge of course completers versus learners who did not complete the course.
3	(Barak, Watted, & Haick, 2016)	**"Motivation to learn in massive open online courses: Examining aspects of language and social engagement" (2016)** Three major conclusions are drawn from this study: In the first place, motivation patterns were similar among English and Arabic participants, indicating a broad cross-cultural trend. Secondly, for successful learning, students and teachers should participate in social interactions, which can be achieved via large and small online groups. The third point is that MOOC completers can be characterized according to their motivation to learn. There are five types of MOOC completers identified: problem-solvers, networkers, communicators, and learners Beneficiaries, innovators, and complementary learners.
4	(Littlejohn, Hood, Milligan, & Mustain, 2016)	**"Learning in MOOCs: Motivations and self-regulated learning in MOOCs. The Internet and Higher Education" (2016)** In this study, the narrative descriptions of behavior were compared between learners with high and low SRL scores. On five of the sub-processes examined, significant differences between the self-described learning behaviors of these two groups were found. The motivation and goals of the learners had an influence on how they conceptualized the purpose of the MOOC, which influenced the way they perceived the learning process.
5	(Harju, Leppänen, & Virtanen, 2018)	**"Interaction and Student Dropout in Massive Open Online Courses" (2018)** In this paper, the authors discuss how MOOC interaction capabilities contributed to the low completion rate of a course. They pinpoint the reasons for the high student dropout rate. The above study shows that lack of interaction between instructors and learners is the cause of the insufficient results. Other students may influence the student dropout rate in MOOCs.
6	(Pike, 2018)	**"The Challenges of Massive Open Online Courses (MOOCs)" 2018** As an example, the chapter examines how one MOOC was designed to explore some of the issues. Furthermore, the study analyzes learners' high retention rates.

7	(Jaganathan & Sugundan, 2018)	**"MOOCs: A Comparative analysis between Indian scenario and Global scenario" (2018)** This paper discusses the characteristics of MOOCs and various online platforms from around the world. In this paper, the authors study the growth of MOOCs in India in comparison with the global picture, as well as list of providers who are developing and delivering online courses and challenges associated with MOOC implementation in India.
8	(Sriram, 2015)	**"Comparative Analysis of Massive Open Online Course (MOOC) Platforms" (2015)** A basic comparison of MOOC providers is made in the Study, along with the types of MOOCs offered by the various providers. The paper also examines how MOOCs are influenced. So, it is difficult to determine how transformative MOOCs have been, can be, or will be in the future. A survey of four MOOC platforms was conducted by the author to identify arbitrary factors. To determine the usefulness of MOOC platforms, each of the factors mentioned above is taken into consideration. The study aims to determine the most effective MOOC platform as well.
9	(Arya, 2017)	**"The Rise of MOOCs (Massive Open Online Courses) and Other Similar Online Courses Variants –Analysis of Textual Incidences in Cyberspace" (2017)** Based on frequency analysis, the author suggests that MOOC, in documents online, has received good mentions, with the keyword MOOC appearing mostly after online courses.
10	(Devgun, 2013)	**"Prospects for Success of MOOC in Higher Education in India" (2013)** According to the author of this paper, MOOCs can greatly contribute to higher education and can influence the face of the youth of a country.
11	(Chauhan & Goel, 2017)	**"An Overview of MOOC in India" (2017)** According to the authors, the number of learners who have participated in MOOC courses has been massive. In terms of enrolments, India is the second largest country in the world, after the United States. In order to offer such courses, there are currently a few platforms which are used, such as MooKIT, NPTEL, IITBX, and SWAYAM. Moreover, this paper provides a technical and theoretical overview of these platforms along with a description of their features. Additionally, using web analysis, a comparative analysis is provided between the platforms. The implementation of MOOCs in India faces some challenges that need to be addressed.

3. MOOCs Platforms in India

The Indian government has made a number of steps to support online education, which has allowed many individuals to continue their education and helped the nation's enrolment ratio.

In India, the most popular online platforms are NPTEL, mooKIT, edX, Coursera, and SWAYAM. Apart from the above-mentioned platforms, others also provide online education in various fields but are highly unknown.

The list of online course providers in India is as follows.

- NPTEL (https://nptel.ac.in/)
- mooKIT (https://www.mookit.in/)
- IIT BombayX (https://www.iitbombayx.in/)
- SWAYAM (https://swayam.gov.in/)
- Shikshit India (http://shikshitindia.co.in/)
- Vskills (https://www.vskills.in/certification/)
- U18 (https://www.university18.com/)
- Million Lights (https://www.millionlights.university/)
- Apna Course (https://www.apnacourse.com/)
- UpGrad (https://www.upgrad.com/)
- EduKart Open (www.edukart.com)

- LearnVern (https://www.learnvern.com/)
- Digital Vidya (https://www.digitalvidya.com/)

Below are the details of some of the popular MOOCs platforms in India, which are popular among Indian learners and have decent number of enrollment.

NPTEL
NPTEL (National Programme on Technology Enhanced Learning), is a joint venture of the IITs and IISc, funded by the Ministry of Education Government of India, and was launched in 2003. NPTEL began as an initiative to bring high-quality education to all areas of the country, and now offers close to 600+ courses for certification in around 22 disciplines every semester. (NPTEL, 2022). For course delivery, NPTEL relies on open-source technologies. Google's open-source Course Builder platform, which runs on App Engine and Compute Engine. Furthermore, it mostly provides course information in the form of video lectures recorded in a traditional classroom setting, while some instructors may also utilize slides to present the material. NPTEL is already the world's biggest single repository of technical courses, including streaming video format and with text meta data for videos, text transcription and subtitling, and conversions to all Indian languages. Its courses had low engagement and inconsistent quality at first, and the courses eventually lost their appeal to a significant number of students. In March of 2014, NPTEL began providing open online courses. Anyone outside of the IIT System can now enroll in an NPTEL online certification course and receive a certificate from the IITs. IITs are reaching out and delivering education to people's homes through this programme.

mooKIT
IIT Kanpur was one of the first MOOC providers, offering a course on Software Architecture for the Cloud in 2012. Since then, a lot of effort has been done in this area, both in terms of delivering MOOCs and building tools and technology for delivering MOOCs. MooKIT, a MOOC management system, is one such initiative. The first need for successfully delivering a MOOC is a powerful platform. Existing software in this domain is difficult to maintain and operate, as well as change and adapt to local needs. It also assumes that the end-user has a high level of internet maturity. All of these difficulties are addressed with mooKIT.
The lightweight MOOC Management System mooKIT was conceptualized, planned, and built at IIT Kanpur with a focus on developing countries. It has been utilized in over 60 courses in India and abroad. (mooKIT, 2022)
Another unique aspect of mooKIT is its support for a robust analytics interface. It also allows the student to view their course activity along with the instructor, which is something that is not commonly available on other platforms. It is fully made of open-source technologies, with the main engine running on the MEAN stack, which is based on java script technology and is extremely scalable. It provides four different types of solutions depending on the need:
mooKIT Standard: It's for running a single course. It does not require video to be streamed locally; however, YouTube videos can be used. For instance, mooconmooc.org.
mooKIT Enterprise: It can handle a huge number of online classes. Users become members of a portal and can enroll in courses that they are interested in. For instance, mooc4dev.org and agmoocs.in.
mooKIT Replicated: It is appropriate for places with limited bandwidth since it allows material to be cached on local servers. The servers will sync for changes on a regular basis.
mooKIT Personal or Mobi-mooKIT: It can run on mobile devices that have modest computation and low storage capabilities. Due to device limitations, it does not offer a forum or social networking.

IITBombayX
IIT Bombay created IITBombayX, it is an online platform that provides Massive Open Online Courses (MOOCs) to people of all backgrounds. IITBombayX specialises in Hybrid MOOCs that combine the advantages of flipped classrooms, online lectures, and live interactions with IITBombayX course instructors. IITBombayX offers four different types of MOOCs (EduMOOCs, SkillMOOCs, TechMOOCs and LifeMOOCs) for various learning needs.
IITBombayX is committed to providing the best possible education, both online and in the classroom. IITBombayX was designed for students and organisations looking to transform themselves via cutting-edge technology, creative teaching, and rigorous courses.
We deliver the best of higher education online through our institution, providing opportunity to anybody who wants to thrive, progress, and accomplish.

The objectives of IITBombayX, on the other hand, go beyond providing learners with free courses and information. The IITBombayX is dedicated to doing research that will help us better understand how students are educated, how technology may revolutionise learning, and how teachers and academics teach on and off campus.

We wish to share what we discover as experimenters and innovators. The open-source IITBombayX platform is accessible. They will empower and inspire instructors all around the world and encourage success in Indian massive open online learning by doing and sharing major studies on how learners are educated.

IITBombayX's purpose is to become a premier resource for learners by maintaining focused on the aims and values established when the company was formed. (IITBombayX , 2022)

SWAYAM

SWAYAM, is an acronym for "Study Webs of Active Learning for Young Aspiring Minds." It is a MOOC platform created by the Indian government with the goal of realizing the three cardinal principles of education policy: access, equity, and quality. The goal of this initiative is to make the greatest teaching and learning tools available to everyone, including the most disadvantaged. SWAYAM aims to close the digital divide for students who have been untouched by the digital revolution and are unable to participate in the knowledge economy. (SWAYAM, 2022)

It started with the intention of offering 2,000 courses, which would make it the largest course catalogue of all those given thus far. As a consequence, SWAYAM is a commendable attempt to earn credits while enrolled in the course, which will definitely motivate students to complete the course and get their degree.

SWAYAM has a credit system in place that allows credits to be transferred across colleges. With SWAYAM, an Indian academic institution may provide up to 40% of its catalogue in a given program. School, certificate, diploma, undergraduate, and postgraduate programmes are now available through SWAYAM.

School education is overseen by NCERT and NIOS, while out-of-school learners are overseen by IGNOU. Undergraduate education is overseen by CEC, postgraduate education is overseen by UGC, engineering is overseen by NPTEL, and management studies are overseen by IIMB.

Though the majority of the content for SWAYAM was created for NPTEL and will be repurposed for SWAYAM.

Furthermore, the information or videos created for this platform will be available on e-Acharya, a website that already hosts instructional video content provided by the Ministry of Education.

As a result, SWAYAM encourages the most efficient use of resources, which is already expensive endeavor.

Table II compares four major Indian MOOC Platforms. (Conache, Dima, & Mutu, 2016) have identified some the factors which are important to compare MOOC platforms. In addition the comparison is based on characteristics like availability of mobile app, credit mobility and multilingual support etc. which are deemed important in the Indian context.

Table 2: Comprehensive Comparison of MOOC Platforms

Features	Mobile platform	registered students	courses offered	Credit Mobility	Learning Material	Discussion Forum	Multilingual Support	Video Lecture	Assessment	Total Visit	Time Spent on Site	Android app rating
Platforms												
NPTEL	Yes	620000	990	-	Yes	Yes	-	Yes	Yes	2.0M	00:04:46	4.0/5
MooKIT	Yes	200000	60+	-	Yes	Yes	-	Yes	Yes	5K	--	3.6/5
IITBombayX	Yes	52000+	188	-	Yes	Yes	-	Yes	Yes	15.5K	00:03:33	--
SWAYAM	Yes	10 million	900+	Yes	Yes	Yes	Yes	Yes	Yes	768.1K	00:03:00	4.3

Based on the Table-II, all four MOOC providers highly rely on learning materials, video lectures, and assessment methods in delivering a course to students. In addition, all platforms offer a mobile app for Android users. In fact, SWAYAM received the highest Android application rating. These apps contain video players and allow students to download videos for offline learning. Additionally, they offer quizzes and discussion forums. The table shows the Google Play and App Store ratings from the date of this study. There are different assessment methods depending on the course: all four platforms offer assignments and quizzes for more theoretical coursework. Other than English, SWAYAM offers a lot of courses in multiple languages. In addition to these languages, NPTEL, MooKIT, and IITBombayX offer and provide courses only in English. The MOOC providers are also websites, in addition to being educational organizations. This is why relevant information may be obtained from the web traffic data analysis.

According to SimilarWeb.com (Website Traffic & Mobile App Analytics, 2022) for July 4, 2022, NPTEL is first in the top of the total visit and Time spent on Site.

SWAYAM is the only Indian MOOC platform that offers credit mobility or credit transfer. It is of major importance to integrate credit transfer systems into educational pathways and to enable students to move between institutions and programs. By enabling credit transfer, one can contribute to lifelong learning, improve and expand post-secondary participation rates, reduce unnecessarily high student tuition and educational costs (which may mitigate borrowing for some students), and reduce post-secondary non-completion rates (Junor & Usher, 2008) .

The study examined the number of courses and the categories of courses offered by each platform in the course catalogs displayed on their websites. SWAYAM hosts 2150 courses, next is NPTEL with 990 courses, followed by IITBombayX with 188 courses and MooKIT with 131 courses at the time of this study. As compare the three Indian MOOC platform SWAYAM has the huge number of registration after that NPTEL has the biggest one then MooKIT **and IITBombayX.**

4. Factors that influence significance of MOOCs in India:

There are some factors listed below, certainly influence the advancement of online courses in India (Trehan, Sanzgiri , Li, Wang, & Joshi, 2017)
 - Overcoming the constraints of physical infrastructure and teaching resources
 - Facilitating movement towards 'Open'-ness.
 - Promoting development and practice of online and blended pedagogy to improve quality and scale within the existing University system.
 - Better recognition of online learning and even online degrees.
 - Promoting international marketing and outreach of Chinese and Indian Universities and institutions.

Despite the fact that MOOCs are widely used at many colleges, knowledge of MOOCs is still lacking in Tier 1 and Tier 2 institutions. In India, there are various issues that are considered to be a barrier to online education. However, with the rapid growth of technology and the willingness to accept it, the reasons are now recognized as temporary setbacks.

5. The major challenges for MOOCs in India are:

Creation of digital content: It is a significant difficulty. Voice, video, structured text, and animation are examples of digital content. It requires digital content developer other than subject experts.

Devices: The end devices that are used to view and, if feasible, download digital information.

Internet access: Internet connection and speed are two of the most crucial and problematic factors. It takes a minimum amount of bandwidth to use the internet platform, which is a significant disadvantage in rural areas of the country.

Language barrier: The language barrier is a major constraint for online education in India. Almost every online platform offers English-language courses. MOOCs should take this into account and provide courses in a variety of languages that may be used in a variety of settings.

Assessment& Evaluation: Where there has been a significant investment, proper assessment techniques must be used.

Dropout ratio: One of the biggest challenges of MOOCs is high dropout ratio. Hardly 5 to 10 percentage of people will complete the entire course (Coutere , 2014).

To reduce the dropout rate, students must be motivated to engage in and complete the courses. The factors that would be employed to inspire the learners would include economic benefit, personal growth, and professional identity.

6. Discussion

There are four platforms that can be used for online learning and they are all extremely popular among people from all over the world.

On the basis of the number of visits, it appears that SWAYAM and NPTEL are more popular. Compared with these three MOOC platforms, NPTEL is the most visited website, but they are not the best in Android app rating. Meanwhile, SWAYAM offers a lot of courses in languages other than English, and it also has the highest number of registrations as compared to the other three MOOC platforms. As a result, these platforms are able to offer a wide range of courses in many specializations and are also compatible with mobile devices like Android and iOS. By providing significant

self-learning means, this will help to increase the number of MOOC users through the use of mobility, diversity, and offline learning features.

In terms of the structure of the course and the assignment deadlines, SWAYAM and NPTEL seem to have a much more student- and faculty-oriented approach than IITBombayX and MooKIT. There are several different platforms available, and each of them has its own advantages for self-development.

There are many advantages for each of the platforms above: NPTEL, because of its open source approach, attracts many developers who want to share their work; SWAYAM, because it offers courses from the most prestigious universities in multilingual formats and has a large audience of users. SWAYAM is the second and IITBombayX is third most visited website. MooKIT gives the user the opportunity to share his work as a learner or as an instructor. Overall, SWAYAM leads with 2150 courses, offered by 203 partnering institute, the total enrollment is approx. 27956791 which represent its scalability and reach. The credit mobility is possible through SWAYAM only and till date 2206713 exam registration are done on SWAYAM and there are total 1177076 successful certification.

7. Conclusion

MOOC platforms are utilized all around the world to deliver online courses. NPTEL, mooKIT, IITBX, and SWAYAM are some of the MOOC platforms that are being utilized in India to provide courses. To set up a ground for understanding including theoretical as well as technical aspects, a discussion is provided about each of these platforms with their features and characteristic. A detailed comparative analysis is provided for these platforms is provided using existing research paper, articles, web analysis and other resources considering several parameters. The paper also discusses some issues that are faced while implementing MOOC in India. These recommendations would be useful for any institution for implementing Learning Management System for offering MOOCs.

8. Authors' information

Mr. Balam Singh Dafauti is a research scholar of Computer Science, Uttarakhand Open University, Haldwani. He is currently working as Assistant Professor in School of Computer Science & IT, Uttarakhand Open University. His research interests include Learning Management System (LMS), Massive Open Online Courses (MOOCs), Computer Networking, Cloud Computing Paradigm for Distance Education. He is an active member towards the implementation of e-Learning Based Education (EBE) in Open Distance Learning (ODL) system. He has a good number of publications in journals and participation in conferences and Workshops.

G. Mythili is a Deputy Director since 2012 at the Staff Training and Research Institute, Indira Gandhi National Open University, India. In the past, she has been an Analyst at Staff Training and Research Institute of Distance Education, IGNOU, and Programmer at Computer Division, IGNOU, Computer Instructor in R.K. Computers, Madurai. She has presented conference papers, published research papers in refereed journals, conducted and participated as resource person in various workshops/training programmes in India. Her areas of interest are: Massive Open Online Course (MOOC); E-Learning; Online Training; Training and Development; Multimedia Design and Development; Web Design and Development; OER & Open Source Tools; Staff development and Programme Evaluation.

Reference

Arya, U. (2017). The Rise of MOOCs (Massive Open Online Courses) and Other Similar Online Courses Variants – Analysis of Textual Incidences in Cyberspace. *Journal of Content, Community & Communication* .

Barak, M., Watted, A., & Haick, H. (2016). Motivation to learn in massive open online courses:Examining aspects of language and social engagement. *Research Gate*.

Baturay, M. H. (2015). An overview of the world of MOOCs. *open access*, 427– 433.

Chauhan, J., & Goel, A. (2017). An Overview of MOOC in India. *International Journal of Computer Trends and Technology (IJCTT)*.

Conache, M., Dima, R., & Mutu, A. (2016). A Comparative Analysis of MOOC (Massive Open Online Course) Platforms. *Informatica Economică*.

Coutere , B. D. (2014). To MOOC, or not to MOOC. *Training Journal*.

Das, A. K., Das, A., & Das, S. (2015). Present Status of Massive Open Online Course (MOOC) initiatives for Open Education Systems in India – An Analytical Study. *Asian Journal of Multidisciplinary Studies*.

Devgun, P. (2013). Prospects for Success of MOOC in Higher Education in India. *International Journal of Information and Computation Technology*, 641-646.

Glance, D. G., Forsey, M., & Riley, M. (2013). The pedagogical foundations of massive open online courses .

Harju, M., Leppänen, T., & Virtanen, I. (2018). Interaction and Student Dropout in Massive Open Online Courses. *Researchgate*.

Jaganathan, G. S., & Sugundan, N. (2018). MOOCs: A Comparative analysis between Indian scenario and Global scenario. *International Journal of Engineering & Technology*.

Junor , S., & Usher, A. (2008). Student Mobility & Credit Transfer.

Littlejohn, A., Hood, N., Milligan, C., & Mustain, P. (2016). Learning in MOOCs: Motivations and self-regulated learning in MOOCs. *Research Gate*.

Liyanagunawardena, T. A., & Williams, S. (2013). MOOCs: a systematic study of the published literature 2008-2012. *The International Review of Research in Open and Distance Learning*, 202-227.

NPTEL. (2022). *https://nptel.ac.in/*. Retrieved 05 30, 2022, from https://nptel.ac.in/aboutus

Pike, G. (2018). The Challenges of Massive Open Online Courses (MOOCs). *Reasarch Gate*.

Sokolova, S. (2014, December 28). What are the advantages of MOOCs and how can you benefit from them? *Linkedin*.

Sriram, M. (2015). Comparative Analysis of Massive Open Online Course (MOOC) Platforms. *Proceedings of the Fourth International Conference on Global Business, Economics, Finance and Social Sciences (GB15Kolkata Conference)*.

Trehan, S., Sanzgiri , J., Li, C., Wang, R., & Joshi, R. M. (2017). Critical discussions on the Massive Open Online Course (MOOC) in India and China. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 141-165.

Wang, Y., & Baker, R. (2015). Content or platform: Why do students complete MOOCs? *MERLOT Journal of Online Learning and Teaching*.

Zawacki-Richter, Olaf, Naidu, & Som. (2016). Mapping research trends from 35 years of publications in Distance Education. Distance Education. 245-269.