MOOC: a higher education game changer in developing countries

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Massive Open Online Courses (MOOCs) are a relatively recent online learning phenomenon that has developed in the last five years. The opportunity that MOOCs offer to developing countries has generated significant interest from higher education as it has opened doors to step into territories that were never available before this era. This paper reports on the research findings of the impact of MOOCs in developing countries. The key challenges and opportunities identified by the researchers in using the MOOC concept within the Sri Lankan higher education context is discussed. It also highlights how developing countries can transform education, and provide lifelong learning opportunities which will give access to learning resources, innovative learning technologies, higher engagement and collaborative learning opportunities with international experts.

Keywords: MOOC, learning technology, innovative learning, higher education, staff capability

Introduction

The Massive Open Online Courses (MOOCs) are a relatively recent online learning phenomenon that has developed in the last five years. MOOCs are now generating considerable media attention and significant interest from higher education institutions around the world (JISC, 2013). MOOCs are mainly free, online courses offered by leading higher education institutions that enable unlimited global participation which provides access to thought leaders in a variety of academic disciplines. While some MOOCs offer opportunities to access course resources without any restrictions, some MOOCs have enabled collaborative learning and given access to industry leaders by using engaging learning environments that have enriched learning within the MOOC environment.

Although MOOCs are seen as an extension of existing online learning approaches with open access and scalability, they have led to a different interest in developing countries. The opportunity that MOOCs offer to these countries has generated significant interest from government education institutions and commercial education organisations, as it has opened doors into territories that were never available before.

While MOOCs are considered to be a disruptive innovation in the western world, developing countries like Sri Lanka, with higher English language literacy rates, have started to reap the benefits from the openness of the MOOCs. The Sri Lanka Institute of Advanced Technological Education (SLIATE), is one of the Higher Education Institutions that has already moved towards innovative teaching and learning (Lokuge Dona, Keppell & Warusavitharana, 2013) and continues to take the opportunity to build capacity and capability through MOOC engagement.

This paper reports the research findings of the impact of MOOCs on developing countries, including an in depth analysis of challenges, opportunities and the use of MOOCs specifically within Sri Lankan Higher Education Institutions.

MOOC characteristics

According to Carr (2012) more than a million people in the world have participated in MOOCs. The massiveness of MOOCs have given a large number of learners in the world access to learning material. This openness allows the participants to view learning materials, take assessments and be engaged in learning from elite universities such as Stanford, Harvard and MIT (Kolowich, 2014). The ability to build knowledge through

social constructivism (Salmon, 2011, Salmon, 2013) and connectivism strategies (Siemen, 2012) has increased active engagement and interaction in a MOOC environment. The accessibility and flexibility provided through MOOCs (deWaard et al., 2011) has generated great interest from low income earners and time-poor learners. While MOOCs provide a new way of learning, there are identified challenges and opportunities within MOOC environments.

The research says that MOOCs provide several opportunities to the wider community, such as time zone boundaries and locality (Friedman, 2013); student engagement (Trowler & Trowler, 2010) given the creative commons resources that can be re-used; easy access to cross discipline resources without institutional barriers (Carr, 2012); easy enrolment and network participation opportunities (Kop, 2011) with lifelong learning capabilities (deWaard et al., 2011; Koutropoulos et al., 2012). MOOCs also claim to provide a wide range of personal learning options that allow participants to learn anywhere and at any time (Carr, 2012).

Research methodology

In this study the authors examined the use of MOOCs in the Sri Lankan higher education sector in terms of using MOOC resources, tools, engagement, and collaboration with international participant groups.

The research questions that guided this study are:

1. What are the identified opportunities for the Sri Lankan higher education sector through MOOCs?
2. What are the challenges faced by Sri Lankans when participating in MOOCs?
3. How can the Sri Lankan higher education sector leverage through MOOCs?

The study employed an online ethnography design by studying the MOOC culture and communities virtually. With the courses delivered online, authors were able to gain a deeper understanding of the environment (Bowler, 2010; Johnson & Humphry, 2011; Kozinets, 2010); which was the MOOC environment in this situation. For this purpose, several researchers participated in and observed different MOOCs offered by Coursera, Udacity, Google, Open2Study and CourseSites to gain a better understanding of the MOOCs' concepts. All authors participated in the Carpe Diem MOOC (Swinburne, 2014; CourseSites, 2014) that was conducted by the Swinburne University of Technology over a six week period.

Data was also collected through an online questionnaire, semi-structured interviews and autoethnographic insights (Ellis, Adams, & Bochner, 2011; Keefer, 2010) that the researchers gathered by recording their experiences in journals. In addition, a questionnaire was distributed to several Sri Lankan educators who completed the survey.

A sample of seventy five educators was selected from the population randomly. Out of that 45 educators were sent the online questionnaire and 55% of them completed the questionnaire during the expected time frame. The remaining thirty educators, 40% of the selected sample, received the paper-based questionnaires. The majority of these respondents (90%) returned the questionnaires, having answered all the questions. After collecting the responses, themes were identified in order to develop interview questions. Interviews were carried out with 20% of the respondents. Forty-two percent of respondents had the experience of participating in MOOCs.

While quantitative data was analysed through the Statistical Package for Social Sciences (SPSS) version 16 in order to create summaries and quantitative inferences, responses to the open-ended questions in the questionnaire were analysed qualitatively along with the interview data. Questionnaire responses, interview data, the researchers' autoethnographic insight, and participants' comments were analysed and compared while SPSS provided descriptive statistics, such as Pearsons correlations, to determine the relationship between the identified variables.
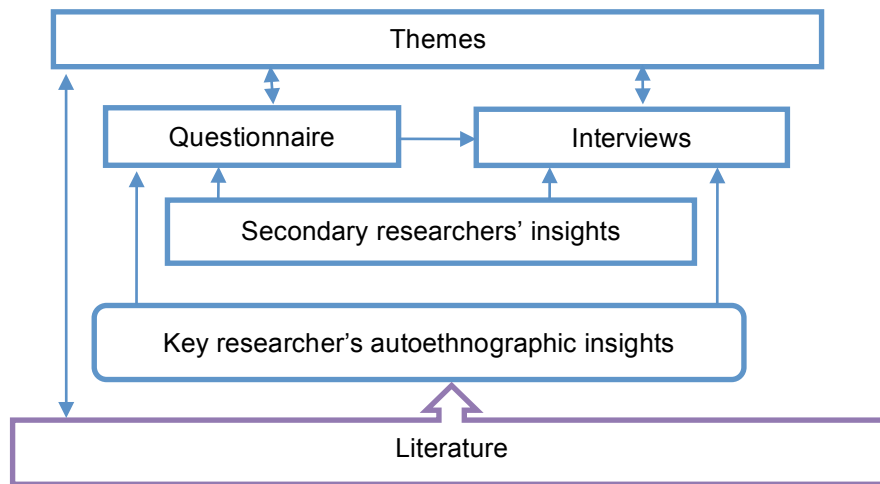
Figure 1: The process of the study analysis

The data was interpreted using an ethnographic research design based on a framework of analytical induction and comparative analysis as shown in figure 1. The data gathered was continuously refined to further collect research-specific data (Hammersley, 2004).

Discussion on research findings

The MOOC experience

A team of 10 SLIATE academics took part in the Carpe Diem MOOC (CD MOOC) offered by the Swinburne University of Technology in Australia (Swinburne, 2014; CourseSites, 2014). SLIATE participants found the CD MOOC that was based on the Carpe Diem Learning Design Process (Armellini & Jones, 2008; Salmon, 2011) to be a complete change of course design and delivery approach compared to the established lecturing style. The CD MOOC approach to teaching and learning with facilitated and guided online methodology was considered to be another new landscape for SLIATE staff who had been looking for ways to transform traditional course delivery as a government funded higher education institution.

A couple of weeks prior to the start of the CD MOOC, the MOOC team initiated communication by sending numerous count-down emails reminding the participants that the course would soon be starting, and giving instructions on how to log on and where to go for help. The SLIATE participants who found this process to be a great method for increasing student enthusiasm and engagement, are also now considering adapting the process within their own course delivery. While the course was informative, it was also challenging since the MOOC used various tools such as Twitter, Facebook, Google Plus, Maps, and Roster. It also alerted the team to the potential opportunities for utilising free social media and educational tools such as mind mapping tools, collaborative learning tools for educational purposes in order to connect Sri Lankan staff and students to others around the world.

Course facilitators and industry experts presented weekly, using virtual classroom environment Blackboard Collaborate. These virtual classes enabled the participants to communicate with experts that were scheduled to cover at least two time-zones. The SLIATE participants thought that this was another way in which Sri Lankan academics could give students access to a range of experts without geographic barriers. The six stage Carpe Diem process assisted the SLIATE participants to re-think about learning design process as being creative and scaffolding learning experience by weaving real-life examples, and covering required learning outcomes into activities called e-tivities in order to scaffold learning (Armellimi & Jones, 2008, Salmon et al., 2008; Salmon 2011; Chitanana, 2012). As Tumminello (2005) and Salmon (2013) explained, the effective combination of creative exercises with real-life examples and simple illustrations for developing storyboarding was an important skill that enhanced combining a variety of media for teaching and learning. The concept of storyboarding that was introduced in the CD MOOC for course design (Salmon, 2014) was well received by the SLIATE staff members who have already started using within their own course design process.

This experience was found to be different to participating in other MOOCs that were categorised as xMOOCs, as there was a lot of interaction and engagement throughout the course. However, it was found that the use of

high end technology in the MOOC was a challenge to the SLIATE participants, as they had to learn to manage and use it within a short period of time. While the process was challenging at the time, SLIATE participants have identified the value of using educational technologies in the online courses to engage learners effectively. Gregory & Lokuge Dona (2013) also, identified that even though the initial use of educational technology for teaching and learning is challenging, it enable better engagement and a learning environment among the learners.

## Opportunities for the Sri Lankan higher education sector

The MOOCs provide several opportunities to the wider community such as time zone boundaries and locality (Friedman, 2013); 86% of the research participants indicated that MOOCs were a great innovation as they enabled learning without time zone and locality restrictions. Of the research participants 83% who are higher education professionals considered MOOCs to be a great opportunity to access the latest learning resources and the most up-to-date developments in the subject area. Moe (2014) has identified that accessibility has one of the key findings of MOOC participation. It has been highlighted that 'open access' to educational resources through MOOCs have been welcomed by many educators, researcher and learners (Moe, 2014; Kassabian, 2014; Hill 2014).

MOOCs have shown that they are a creative way to engage students in learning (Trowler &Trowler, 2010) with creative commons resources and many freely available tools(Salmon, 2011); While the MOOCs were providing open access to resources, it also made the teaching and learning approach in different institutes transparent for the participants. Of the research participants, 87% indicated that the ability to take part in a new teaching approach was exciting and an eye opener for their teaching career because they had to re-think their course delivery and how they could engage their students in a collaborative learning environment.

MOOCs also claim to provide a wide range of personal learning options that allow participants to learn anywhere and at any time (Carr, 2012). Additionally, MOOCs have provided easy access to cross discipline resources without institutional barriers (Carr, 2012). The participants also indicated that open enrolment has enabled them to access cross disciplinary resources easily. This has also encouraged people to engage in lifelong learning capabilities (deWaard et al., 2011; Koutropoulos et al., 2012; Moe, 2014; Hill, 2014). The ability to be independent of a geographic location and participate in a MOOC has been leveraged by developing countries, as 25% of participants mentioned that they applied the knowledge gathered through a MOOC when both developing and studying their courses. Additionally 12% applied their learning during course development and delivery in their respective institutes which further indicates a use for MOOCs in the Sri Lankan higher education sector. However, 44% of research participants had not applied the skills, resources or other findings that they had gathered through a MOOC within their teaching practices. Of the respondents, 42% had experience participating in MOOCs. It was highlighted that respondents encountered problems such as infrastructure facilities (58%), unavailability of skilled staff (51%) and other reasons (29%) when attempting to implement concepts identified through MOOCs in a Sri Lankan education context. The research findings indicate that 86% of Sri Lankan higher education professionals have started using MOOCs to engage in professional development.

Identified challenges

While 86% of Sri Lankan participants found MOOCs useful, 95% indicated that there were several challenges that they faced when participating in MOOCs.
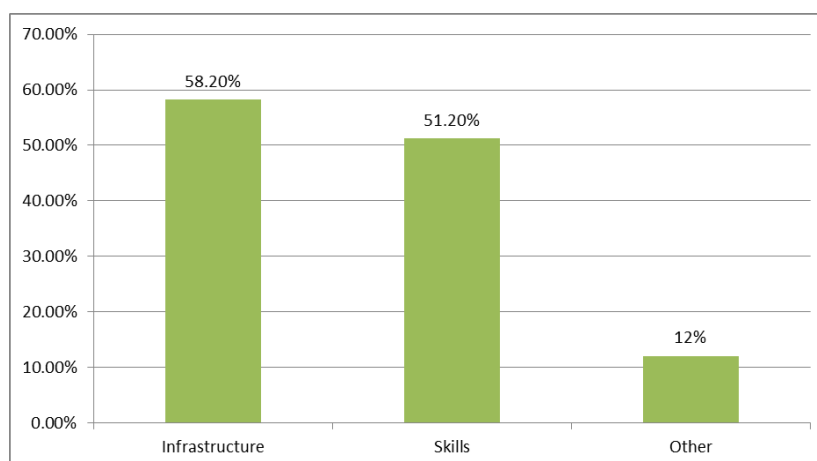
Figure 2: Identified challenges

Many MOOCs use several high end digital learning technologies such as wikis, blogs, and other social media tools including Twitter, Google Groups and similar tools. While these tools added value to their learning, exposing new tools and resources, 76% of participants indicated that it has taken more time to engage in the MOOC content, as the professionals were not familiar with these innovative tools. This indicates that staff require professional development to be able to use innovative technologies for teaching and learning. The research findings showed that 51.2% of participants indicating that skills development as a challenge.

The access to open resources has provided great insights, however low band width has always delayed the learning process when using tools such as Blackboard Collaborate and Adobe Connect. A further 56% of participants' indicated that technology and accessibility was a concern in developing countries when implementing technology-dependent courses. It was also indicated that 58.2% (refer Figure 2) participants found infrastructure is a greater issue in the country to be able to use innovative technology with wider community.

It is also identified that staff professional development process is needed to develop skills to accommodate new learning tools and methods. Technical skills was found to be a problem, with 51.2% indicating that they require more technical skills to develop and deliver the courses. One of the challenges mentioned, was allocating adequate time for skill development.

The participants also indicated that gaining management support, changing traditional course delivery practices, supporting staff to effectively embrace change, changing attitude towards adapting new methods and educational tools as some of the other issues that they face when adapting new and innovative learning technologies in the Sri Lankan higher education sector.

Table 1: Other identified challenges

Other identified challenges	Percentage
Traditional educational practices	75.6
Attitude towards change	63.4
Legal factors	12.2
Political Influences	7.3

Table 1 indicates the identified additional challenges. Through professional development, some of the identified challenges such as traditional educational practices and attitude towards change could be addressed. However, these are major issues in the Sri Lankan higher education system that needs attention. It is clear that the legal factors and political influences will have less impact on MOOC or use of MOOC practices with in the Sri Lankan higher education system.

There was a strong indication about the use of MOOC concepts in the higher education sector in Sri Lanka, with 83% indicating that the MOOC idea was suitable for higher education, and 87% being of the opinion that the MOOC was practical when applying to study in the higher education system in Sri Lanka.

The Pearsons correlation was calculated to investigate the relationship between different attributes and it was

found that the practicability and suitability represented a positive relationship of 0.546, indicating that the use of MOOCs within the higher education sector to be strong being directly correlated as a practical and suitable idea. This highlights that research participants believe that MOOCs are suitable for the development of higher education in developing countries.

Recommendations

The findings of this research are dependent on a small sample of research participants. However, based on these findings and limited scope of the research derived some recommendations that could assist developing countries to enhance educational opportunities.

This research indicates that, it is important to provide better technical facilities to the participants to reap benefits of the free open online courses. It recommended providing technical and professional support to up-skill staff. Taking measures to professional development processes through higher education institutes also recommended enabling staff to be involved in their enhancing educational practices.

The research highlights many interesting findings, and it is recommended that in-depth research is carried out to gather detail information about different aspects of staff needs. Further study will enable developing countries to identify how MOOCs can be utilised to up-skill staff, create opportunities and change higher education industry.

Conclusion

Most of the research participants indicated that MOOCs are a great innovation as they were able to learn without time zone and locality restrictions, giving them the opportunity to access the latest learning resources and most up-to-date developments in the subject area. The participants in this research indicated that the ability to take part in a new teaching approach has enabled them to re-think their course delivery and how they engage students in collaborative learning environments. It was also mentioned that respondents encountered problems such as infrastructure facilities and the unavailability of skilled staff when attempting to implement concepts identified through MOOCs in a Sri Lankan education context. The survey results indicated that developing countries are leveraging learning through MOOCs to engage in professional development activities. There was a strong indication that the use of MOOC concepts in the higher education sector in Sri Lanka will benefit for professionals as well as students. MOOCs have created a new era in the higher education sector in Sri Lanka expediting the use of innovative teaching and learning methods to provide a better learning experience to the learners.

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